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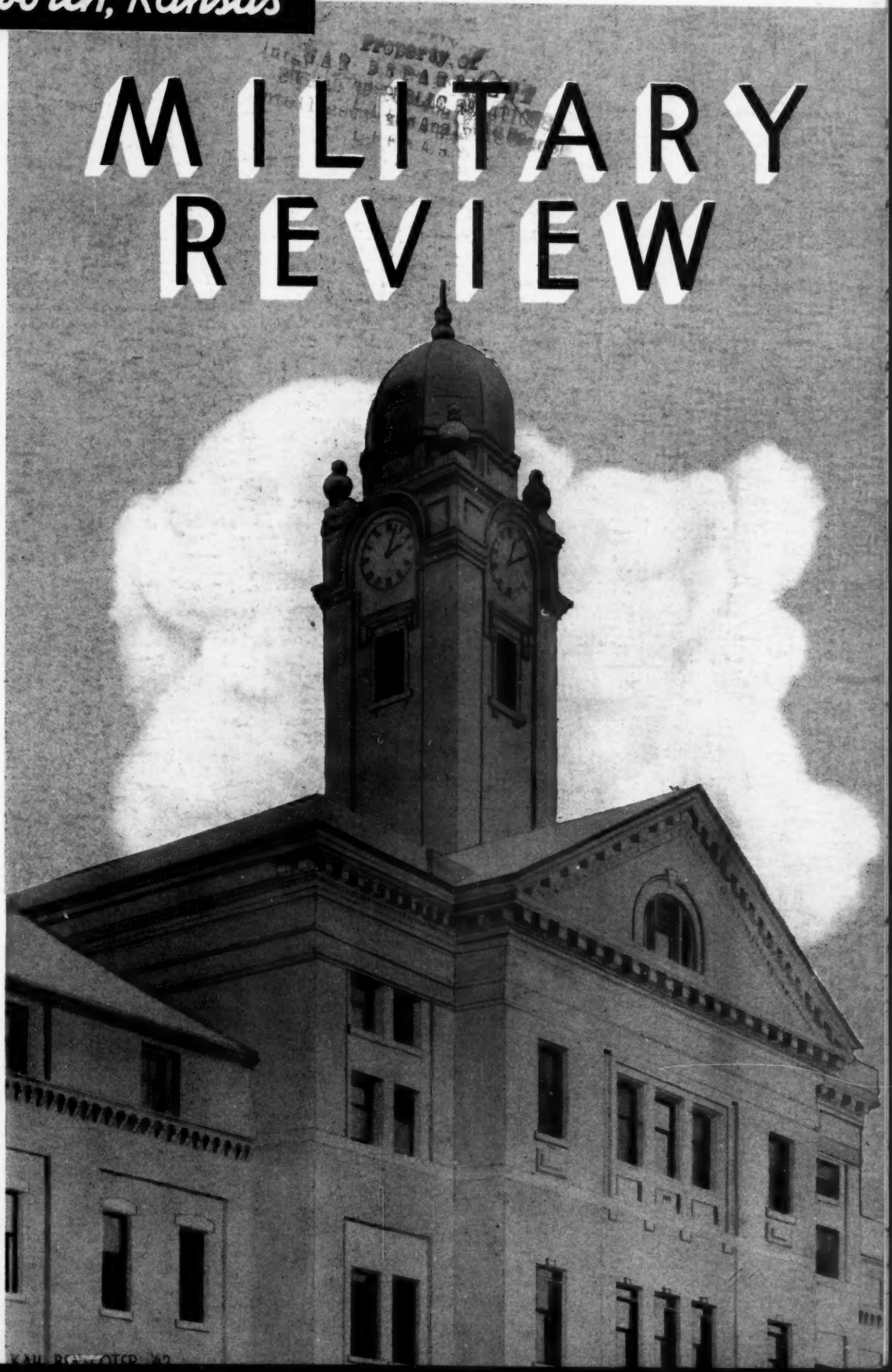

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Mission

The object of this publication is a systematic review of current military literature, through cataloging articles of professional value, in selected military and naval periodicals, in the domestic and foreign field.

Articles from foreign periodicals are treated by translations of titles and digests of contents; material of particular importance is covered more extensively in a section of "Foreign Military Digests."

A "Library Bulletin" Section lists books, recently accessioned, which are of particular significance.

This *Review* is published as a guide to modern military tendencies and to inspire vigorous thoughts on the subjects treated.

The opinions expressed and conclusions drawn in articles are *solely those of the authors and are in no sense official.*

Acknowledgement

The editors desire to express their thanks and appreciation to those persons who have valuably assisted in the preparation of material for this issue. The work of contributors has been done in addition to their regular duties and gratuitously on their own time. We are very grateful to the following officers for their generous donations:

MAJOR GENERAL KARL TRUESDELL---*The Combat Team in an Infantry Division*
COLONEL HENRY P. CARTER---*Our System of Evacuation in the Combat Zone*
COLONEL OSWALD H. SAUNDERS---*Role of the Commander and Staff of a Wartime Division*
LIEUTENANT COLONEL JOHN B. BENNET---*The Essence of Morale*
LIEUTENANT COLONEL HENRY E. KELLY---*Jungle Warfare*
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CAPTAIN RALPH H. REDFORD---*Barrage Balloons*
LIEUTENANT COLONEL LOUIS S. N. PHILLIPP---*The German Foot Infantry Division*
LIEUTENANT COLONEL EDWARDS M. QUIGLEY---*Birth of an Infantry Division*
LIEUTENANT COLONEL FRANK R. SWEENEY---*Military Government*
MAJOR GEORGE F. ASHWORTH---*Lamp of Experience*
MAJOR R. V. BOYLE, British Army---*Commandos*
MAJOR GUSTAVE E. KIDDE---*Some Aspects of Mountain Warfare*
CAPTAIN NELSON J. ANDERSON---*Chemical Warfare*

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The Combat Team in an Infantry Division

By

Major General Karl Truesdell, *Commandant.*
Command and General Staff School.

Modern Warfare

The *combat team* as an operating formation within divisions is a basic development of the current war of maneuver. Its concept is that of movement, speed, initiative and controlled striking force. Reinforced and mixed columns for special or subsidiary tasks have been employed for centuries. Such temporary groupings possessed weaknesses inherent in improvised command and staff and, in the absence of combined training, were lacking in teamwork. Today, highly trained, balanced combat groups move and strike under division orders to develop the hostile situation and establish a base from which the division or higher command may attack in decisive directions to effect destruction of the enemy forces. Against a well organized enemy, where maneuver is limited and a concentrated effort against the vital objective is required, the integrated division is capable of a more powerful attack when all components are employed under centralized control than in combinations of its combat teams.

The combat team is the basic infantry-artillery fighting formation and its use has primary application in situations involving movement, development, and the meeting engagement, as typified in warfare of movement. It possesses immediate readiness, speed, flexibility, and striking force. It lacks the means for sustained effort and is highly inappropriate for employment in stabilized warfare, attacks against extended fortified localities or in static defense. Lack of knowledge of the foregoing will result in misunderstanding and improper application of the combat team concept—the difference between failure and success.

The composition of the several combat teams of the Infantry Division, as taught at this school, is as follows:

Tactical Groupings.—For marches and for combat when combat teams are employed, the division is organized into four principal tactical groupings, and a reconnaissance echelon, as follows:

a. Principal tactical groups.

(1) *Combat Team 1* (CT 1) consisting of:
- 1st Infantry
- 1st Field Artillery Battalion
- 1st Platoon Company A 1st Engineer Battalion
- Company A 1st Medical Battalion (less det)

(2) *Combat Team 2* (CT 2) consisting of:
- 2d Infantry
- 2d Field Artillery Battalion
- 1st Platoon Company B 1st Engineer Battalion
- Company B 1st Medical Battalion (less det)

(3) *Combat Team 3* (CT 3) consisting of:
- 3d Infantry
- 3d Field Artillery Battalion
- 1st Platoon Company C 1st Engineer Battalion
- Company C 1st Medical Battalion (less det)

(4) *Division Troops* (DT).—The following comprise the division troops:
- 1st Division Artillery (less three light battalions)
- 1st Engineer Battalion (less detachments)
- 1st Medical Battalion (less detachments)
- 1st Quartermaster Battalion
- Headquarters and Military Police Company (less detachments)
- 1st Signal Company (less detachments)

b. Reconnaissance echelon.
- 1st Reconnaissance Troop.

Command

Command of a combat team is vested in the senior line officer serving therewith. While this is usually the infantry regimental commander, others in line of succession must keep themselves professionally qualified to command units of the several branches.

The staff of a combat team commander is that of his own unit augmented by the commanders (in an advisory capacity) of the other branches in the combat team. Constant association and singleness of purpose overcome initial interbranch apprehension and jealousy.

Employment of General Officers

In addition to the division commander, there are two brigadier generals in the Infantry Division, an "assistant to the division commander" and one in the artillery section. The latter has an organic assignment, together with a staff, to enable him to perform his command function.

Under the combat team concept, difficulty is experienced in determining the best method of utilizing properly these trained commanders while at the same time retaining the paramount tactical advantages of time, flexibility and initiative. As general officers of the line, all are available for appropriate command assignment, regardless of initial branch from which selected. Generally, and in addition to organic assignment, the following command tasks have been given to brigadier generals:

- Second in command, if senior.
- Command of advance guards from several columns, a reconnaissance in force, outposts when furnished from different regiments, and large improvised units where problems of command may arise.

Command of two or more combat teams where a directing influence is advisable or coordination between the two must be effected.

Temporary command of a combat team replacing a commander who is failing, or to any other task as a high powered "trouble shooter."

Command of the grouped divisional rear echelons, reserves, or an important flank.

Command or operating coordination of security against tank and antiaircraft attack including the warning systems therefor.

The division field order assigns the brigadier and issues concurrently to him and to the included units their instructions. This saves time and adds no additional burden to the division staff. The brigadier, who probably assisted in the formulation of the initial order, orally gives additional specific directions to his units; thereafter being free to supervise execution and to make his influence effective at decisive times and places.

Detachment-Attachment

Changes in the composition of a combat team may be ordered by the division. Depending on the situation, it may be completely dissolved, one or more units may be taken therefrom, or reinforcements may be added as essential to its further operations. Division orders, only, effect the foregoing. That is, a combat team, *per se*, may not drop an organization because it is no longer usable nor may it pick up a unit just because that unit is adjacent or is within the geographical purview of the combat team or because its services at the moment are badly needed. The changes ordered in the field order may be as follows:

"CT 2 ceases" (this dissolves the combat team, the 2d Infantry thereafter is assigned a mission in field orders and the other units or detachments revert to their organic command and require no further mention in the field order).

"CT 2 ceases, 8:15 P 14 June"

"CT 2, less 3d FA Bn"

"CT 2 atchd Co B 1st Engr" (the remainder of the company joins the platoon already with the combat team).

"CT 2, atchd 1 btry 1st FA Bn & 24th Inf"

"CT 2, atchd det Co B 1st Med Bn, * * *"

"CT 2, less 1 btry 3d FA Bn on arrival AYER"

The effective time or place is included in the field order when the tactical situation so requires. Otherwise, it is arranged by the commanders concerned. The artillery is an exception; it should not pass from division to combat team until receiving a release from the division and actual missions, including full information *and communication from the combat team.* Similarly, before passing to division or other new assignments, (assuming that the new targets are within range) artillery continues previously assigned support until survey is completed and communication (wire) exists. When movement is necessary, special arrangements are made to insure continuity of fire support and avoid long periods when the artillery is out of action due to displacement.

Incident to service, the Division Engineer may temporarily reinforce his platoon in a combat team, either in means or personnel, in order to provide an anticipated service or to meet a special situation. Orders therefore are unnecessary, such action being routine. For example, the construction of extensive mine fields in the zone of a combat team may be effected separately by another engineer unit or the engineer officer of the combat team may be reinforced and directed to accomplish the task. Simple stream crossings would be under the combat team; extensive bridging operations would be by order of the division even though for the benefit of the combat team.

Signal and medical detachments, which must perform a continuing function or service, are increased or decreased by the division staff officer concerned as necessary to maintain adequate support.

Truck groups, as additional personnel carriers, are clearly set forth in the field order as to number, time and place of availability and frequently, limitation as to use and time of reversion, as follows:

"CT 2 ***

Co A 1st QM Bn—24 trks, report at once.

Trk Gp 6th Med Bn—5 1½t, eastern exit SHIRLEY 9:10 P.

"CT 2 ***

10 trks 1st Sig Co available until 4:00 A 24 June.

AMM Tn 3d FA Bn dump load, report at AYER, released by 6:00 A 24 June."

Artillery Support

In the division order, general or direct support missions are prescribed only for those artillery units not included within combat teams. Artillery included in the combat team is "attached artillery."

The artillery commander of the combat team coordinates all available fire support from units not a part thereof. He requests the division artillery commander for additional fires, for ammunition and for airplane missions. He keeps the division artillery commander informed as to the location and missions of his batteries, his command and observation system, and the status of his ammunition.

Supply

Class I supplies should be distributed on a combat team basis. The S-4 of the combat team controls the truck movement and supervises drawing and reissue to the units comprising the combat team, as well as to the detailed issue within his own organization. Signal and Medical detachments with a combat team are too small profitably to bring with them mess personnel and equipment. These detachments should be attached for rations to a headquarters company or battery.

Close estimates as to actual ration strength, including attachments, are essential. Changes in composition and strength of a combat team must be anticipated, otherwise emergency issue from the division dump (if any) or quick withdrawal of overages issued elsewhere are necessary.

Summary

The principle governing the formation of the combat team is fundamental. It applies to the approach to battle and to local combat more particularly than to simple marches and bivouacs in areas removed from hostile interference. This fundamental principle envisages the composition of a task force which is organized to provide the military means

required to accomplish a tactical mission in a local area on the battlefield—organized to fight in, as well as to march to, the battle area. To dissolve, *habitually*, the combat team when combat is imminent, regardless of the degree of opposition presented by the enemy, is as erroneous as to continue to use the several combat teams, in un-coordinated efforts when the situation demands that the entire strength of the division be coordinated to gain a decision. Combat teams are compact, hard-hitting groups composed mainly of infantry and artillery elements capable of "punching through" enemy resistance on a local front where the enemy lacks organized resistance or is too widely dispersed. These "punching groups" should be used to gain the maximum tactical advantage over the enemy without entry into the closely coordinated effort of which the infantry division is capable unless such action is clearly indicated. Boldness in the employment of combat teams may obviate the need for coordinated battle action by the division as a whole.

Recent maneuvers have emphasized the danger of employing combat teams at too great intervals but these maneuvers also emphasized the advantage of determined action by fast moving, well organized, combat team forces capable of opening up the enemy position for a rapid advance on broad fronts, thus causing hostile forces to collapse by reason of envelopment. The German battle teams fighting in Flanders and in northern France in May and June 1940, and later in Yugoslavia and Greece, demonstrated the efficacy of such hard-hitting combat task forces.

Role of the Commander and Staff of a Wartime Division

By

Colonel Oswald H. Saunders, *Infantry*, Former Director, Special Course, Command and General Staff School

Wartime divisions must be geared for the offensive, and that offensive must be for combat that is now truly three-dimensional. Speed in both thought and action is most essential, but this does not mean that speed is to be gotten at the sacrifice of sound judgment. You will remember that President Lincoln, in his famous letter to General Hooker when he placed the latter in command of the Army of the Potomac, said in part:

"Beware of rashness, but with energy and sleepless vigilance go forward and give us victories."

Going forward—offensive action—calls for dealing out death, destruction, and annihilation to the enemy's forces. Avoiding rashness calls for preserving the lives, faculties, and health of every possible man in the division. It seems a reasonable thing to say that these two statements introduce and at the same time sum up the role of the commander and the staff of a wartime division.

However, some subdivisions of the subject may well merit consideration. These may be stated as:

a. the role of the commander;

b. the role of staff officers collectively and individually;

c. the relationship of the commander and his staff towards one another and towards others;

d. some procedures applicable to a division headquarters; and finally,

e. the management of men by a division commander and his staff for:

(1) building up and maintaining fighting spirit in the training period, and,

(2) arousing troops to the highest combat pitch before battle.

Our first consideration is the role of the commander. What is his role? He is the final decision man for the division. We may call him the BIG DECISION MAN. General Wavell, in his book "The Art of Generalship," says he has found only one statement of the virtues, military or otherwise, necessary for a general that seemed to him to go to the real root of the matter, and that is attributed to Socrates. In quoting this statement of Socrates it may be pointed out that even his general had to be, in part, a good G-4, G-3, G-2, G-1, and special staff officer as well as commander, even though the terms G-4, G-3, etc., were not in use in Socrates' day. The quotation, with certain added comments in parentheses, is as follows:

> "The general must know how to get his men their rations and every other kind of stores needed for war. *(A good G-4)* He must have imagination to originate plans, practical sense and energy to carry them through. *(A good G-3)* He must be observant, *(A good G-2)* untiring, shrewd, kindly and cruel, *(Apparently a good G-1)* simple and crafty; a watchman and a robber, lavish and miserly; generous and stingy; *(May be applicable to special staff)* rash and conservative. All these and many other qualities, natural and acquired, he must have. He should also, as a matter of course, know his tactics; for a disorderly mob is no more an army than a heap of building materials is a house."

The aim of a wartime division is to be successful in battle and so assist in winning the war. Given proper organization and equipment, a military unit wins battles and hence assists in winning wars, mainly by the ruthless application of force in keeping with two characteristics generally referred to as physical courage and moral stamina. It probably is unnecessary to say that a division commander and his staff need these two characteristics since every enlisted man and every officer in the division need them. The commander and staff need even more moral stamina than other men of the command.

One personal attribute necessary to the division commander may be termed salesmanship. This must be natural. The commander is the symbol of the division. His personality or salesmanship will dominate and sway the division. If he is slow and faltering in his thoughts and actions the division will be like him. If he is quick and decisive in his thoughts and actions the division will also be like him.

Our Field Service Regulations present, as an essential of command, the idea that *inaction is inexcusable*. Since the division commander must make the final decisions of the division, it is essential that he makes his decisions PROMPTLY. That does not imply that they should be made hurriedly nor be the result of mere snap judgment, but they should be as PROMPT at all times as is in keeping with the situation. What is said as to the decisions of a commander will also apply to the decisions to be made by staff officers. Each must learn when to SPEAK and when to remain SILENT.

A commander and his staff must not expect everything to run smoothly at all times, but they must strive to smooth things out. The enemy is not the only opposition the commander and his staff will meet. Time works against them. Weather is sometimes unfavorable. Terrain is sometimes unsuitable for the operations called for or required. Equipment seldom is complete, frequently not standard, and often must be improvised. Training accomplishments often are not uniform and seldom adequate. The strength of the command in both personnel and equipment varies often from day to day. A command is temperamental; its morale is variable. Within a command a feeling of favoritism and unjust treatment and even jealousy may develop quickly. Fixed ideas, indifference, and ignorance will be met and must be overcome. A commander must foresee and overcome these difficulties and his staff must assist him. This *foresight* is an important need in a staff officer.

Remember that no matter how many duties a commander delegates to his subordinates, it is still he, as commander, who is responsible to superior authority for the acts or omissions of his command. An ability for good administration mixed with moral stamina and sufficient industry to keep things moving would seem to sum up the attributes for a division commander and his staff.

The two Brigadier Generals, Infantry and Artillery, in the infantry division are the *alter ego* of the division commander and as such exercise a tremendous influence on the training and action of the division. Initially each is specifically charged with supervision of the training of the branch he represents—infantry and artillery.

Some suggested methods of employing these two generals, particularly the infantry brigadier, are:

Second in command, if senior.

Command of advance guards from several columns; a reconnaissance in force; outposts when furnished from different regiments; large improvised units (especially with reinforcing artillery) where problems of command may arise.

Command of two or more combat teams where a directing influence is advisable or coordination between the two must be effected.

Command of the battle line (of infantry regiments), analogous to the French system.

Temporary command of a combat team replacing a commander who is failing, or any other task as a high powered "trouble shooter."

Command of the grouped divisional rear echelons; reserves; an important flank; a major detachment.

Command or operating coordination of security against tank and antiaircraft attack including the warning systems therefor.

In any assignment of a brigadier his personality as well as that of the division commander may play a part.

Now let us consider the role of staff officers *collectively* and also *individually*.

What is the role of staff officers *collectively*? As expressed in the National Defense Act, from which I quote, the duties of the General Staff with troops shall be: "to render professional aid and assistance to the general officers over them; to act as their agents in harmonizing the plans, duties, and operations with various organizations and services under their jurisdiction, in preparing detailed instructions and the execution of the plans of the commanding generals, and in supervising the execution of such instructions."

If we keep in mind that a staff officer as such COMMANDS NOTHING but that under the above generalization in the National Defense Act, he has a broad role of rendering professional aid and assistance to and acting as the agent of the Commanding General, we see that the role of a General Staff officer with troops is not only that of planning and supervising, but it is also that of seeing that execution is obtained.

Without attempting to list his duties in order of importance or time or any special sequence, we might say that the staff officers:

a. serve the troops;
b. prepare details in keeping with the essential elements of information;
c. furnish advice;
d. enunciate orders;
e. supervise execution of orders;
f. foresee situations;
g. coordinate action and inspect for results.

In all of these the staff officer must remember that he is doing nothing for himself but everything for and in the name of his Commanding General. It is well for each staff officer to bear in mind always that all policies, decisions, and basic plans must be authorized by the commander BEFORE they are promulgated and BEFORE they form the basis of supplementary decisions or orders.

Once the commander has given his approval to any specific policy, decision, or basic plan, the commander's staff officers have thereby been delegated the authority to issue in his name supplementary orders IN FURTHERANCE THEREOF, but NOT CONTRARY THERETO or in AMENDMENT THEREOF.

It may be helpful to recall to you that Napoleon laid down four qualifications for a high ranking staff officer. They are:

a. to become familiar with the geography and topography of the country in which his General is operating;

b. to be skillful in conducting a reconnaissance;

c. to be able to portray with simplicity the most complicated tactical movements;

d. to be attentive to the prompt distribution of the General's orders.

Napoleon's requirements appear to be applicable even today.

Let us refer back to one of the duties of a staff officer, namely, to serve the troops. It will be well for a staff officer to remember that he need not expect to remain a staff officer long if he fights his own troops. His job is to serve, assist, and pacify the troops and not to annoy them. He does not have to be servile to do this but if he continually aggravates and annoys them, then he is unsuited to be a staff officer and should be put somewhere else.

As to *special staff officers,* these are a group provided to assist the commander in the exercise of his functions by giving specialized advice as to technical, supply, and administrative matters. Certain of these special staff officers are also quite often unit commanders. The engineer officer, the signal officer, and others often function in this manner. The special staff officers work with all sections of the general staff. Thus, for example, the signal officer, though primarily working with G-3, must from time to time assist and furnish advice to G-1, G-2, and G-4; and at times he assists the other members of the staff group. The main thing is to avoid the notion that a special staff officer merely assists one general staff group and not all.

In the general staff group, the Chief of Staff is the coordinator of the group. It is to him that the other staff officers look for their instructions and guidance. The Chief of Staff is responsible for educating and training his assistants. He is charged with formulating and announcing policies for the general operation of the staff.

A Chief of Staff requires all of the attributes of a commander. He is the adviser and principal assistant to the commander. When he acts on his own responsibility, as he sometimes must, he makes every effort to inform the commander in the shortest possible time regarding the emergency that caused the action and what action was taken.

In combat the Chief of Staff is particularly concerned with keeping abreast of, or ahead of, the situation. A well posted situation map kept up by the staff enables him, and also the Commanding General, to act promptly and effectively.

A Chief of Staff must know his commander's desires and ways of doing things. The Chief of Staff receives his instructions from the commander and apportions the details among the subordinates; supervises their activities and requires them to cooperate and finally receives their finished work; checks and tests it, and presents the final draft to the commander for approval.

Why do we emphasize the Chief of Staff? The answer is: because the others are merely assistants to the Chief of Staff, and it is he who is the principal adviser and assistant to the commander.

The ideas already expressed as to staff officers *collectively* are all applicable to staff officers *individually.* Any staff officer must be active, resourceful, and thorough. He must get results. A staff officer will save himself much grief if he will remember that any order that CAN be misunderstood, WILL be misunderstood. It has been said that in wording an order an officer should word it as if he were sending "a trans-Atlantic cablegram to a fool and paying for it himself." That is not an impossible catch phrase to remember.

As leaders and staff officers, remember to radiate *confidence of bearing, enthusiasm,* and *cheerfulness,* even under the most discouraging circumstances. Your unselfishness will be noted, at least, by the officers and men under you. It is said that *confidence* was the outstanding characteristic of the Duke of Marlborough. His confidence alike in the valor and discipline of his troops, in the zealous cooperation of his colleagues, and in his own tactical skill enabled him at Blenheim, one of the decisive battles of the world, to snatch a victory even when outnumbered by a strongly posted enemy.

He is reported to have then said: "In war everything is very simple but the simple is very difficult." (Page 198 of *Marlborough and the Rise of the British Army* by C. T. Atkinson.)

Robustness and *confidence* are perhaps the two most necessary characteristics in a commander and a staff officer. By robustness is meant the ability to stand up under the shocks of war. By confidence is meant that inner sureness that enables a commander to face a calculated risk with a belief that all his objectives will be reached.

Perhaps we may sum up the desirable attitudes of members of a staff as that of CONFIDENCE combined with HUMILITY and governed always by a fine LOYALTY to the the division commander. Remember always that the division commander is the big decision man, the Chief of Staff runs the headquarters; and you as staff officers, whether general staff officers, special staff officers, or personal staff officers, "just work there."

Now let us consider the RELATIONSHIP between commanders and staff members and amongst staff members themselves. Perhaps it is best to look upon this group as a *family* as it really is. When we use the term family, we should think of the best examples of family relations within our knowledge. Some are perhaps familiar with families that have feuds. That type of family we eliminate from our consideration when thinking of the relationship that must exist in a proper staff. In any well regulated family there are discussions, sometimes intense and heated, but always within the bounds of good manners, mutual respect, and loyalty. In any such family there must be one recognized head. When that head announces a decision, every member must cheerfully and loyally put a shoulder to the wheel. In a family the head may not always be the male. However, in the division, the Commanding General is always the head. Now, just as we may express the relationship within a staff as that of a GOOD FAMILY, so we may express the relationship desirable between the division and its adjoining divisions and other groups as that of a GOOD NEIGHBOR. President Roosevelt has laid down that rule for relations with other countries, and it is certainly a sound rule of conduct for adjacent military units. It is hardly necessary to stress the point further as to the division.

Now let us consider the PROCEDURE of a division headquarters. The personnel of the headquarters of a division operating in the field will function in at least two groups —one known as the forward echelon and the other as the rear echelon. Our Staff Officers Field Manual indicates which staff officers are included in the forward echelon and

which in the rear echelon. The actual procedure in each of these echelons will vary, principally, in accordance with the personality of the division commander, and to a lesser degree with the personality of each member of the staff. It is particularly important that the procedure be one in which work may be done with a minimum of friction, and at the same time work may be *rapid* and not *ponderous*.

As an aid to procedure at the division headquarters and at other headquarters throughout the division, we have what is known as *standing operating procedure*, otherwise known as SOP. The main purpose of SOP is to provide "short-cuts" and to save time. In the SOP are included those elements of action, such as staff operation, movements, combat, etc., as lend themselves to definite, standardized procedure *without* loss of effectiveness, and on which the commander may make an election of one of two or more ways of doing a thing.

Our Field Service Regulations sound a warning against multiplying staff personnel at a headquarters and lay down a requirement that a headquarters should be organized so as to maintain its readiness for prompt movement. There may be a temptation to organize a headquarters for comfort or for some other special purposes, but the main idea back of all should be that of *readiness for prompt movement*. If that is kept in mind, probably all other requirements will be met to a satisfactory degree.

The division commander and his staff are constantly concerned with the *management of men*. To what purpose are they concerned with the management of men? Primarily, now that we are at war, to build up and maintain a fighting spirit during the training period and to arouse troops to the highest combat pitch before battle. The division commander is certainly interested in these matters, and staff officers assisting him must be interested in them also.

Some factors in managing men are:

1. TIME SAVING:—i.e., being *receptive*, frank, impressive and unhurried.
2. CONFORMING:—i.e., being *firm*, patient, tolerant and positive.
3. RESTRAINING:—i.e., being *courteous* and dignified.
4. STABILIZING:—i.e., being calm, consistent, unselfish and *just*.
5. LOYALTY FORMING:—i.e., being kindly, friendly and *able*.
6. STIMULATING:—i.e., being cheerful, enthusiastic and *confident*.

While all of these might be discussed it is sufficient to touch upon only one or two.

The matter of *receptiveness* may perhaps be illustrated by reference to the experiences of certain assistants to a Chief of Staff who generally combatted any new idea presented to him. These assistants soon discovered that this Chief of Staff liked to be spoken of as having originated most ideas at headquarters. The assistants also found that this particular Chief of Staff had a short memory. Thereafter an assistant would bring up a subject and when his idea was met by objections from the Chief of Staff the matter would be dropped at once; but some twenty-four or more hours later the assistant would again bring up the matter, always being sure to credit the idea to the Chief of Staff by saying he had been thinking over the matter under discussion and understood the view of the Chief of Staff to be somewhat like this—whereupon he would express his own view and get concurrence from the Chief of Staff at once. Several faults may be pointed out in this—the main one being that their particular Chief of Staff was not receptive to new ideas until credited with them himself. His assistants had to resort to subterfuge to get things done.

We might consider the matter of JUSTICE. Unless the enlisted man feels that justice is being dealt out to him, there is little use in expecting to accomplish much.

The following story concerning justice on the battlefield was told by an outstanding combat leader in the First World War.

> "A battalion was going into the woods, making an attack; it had a few casualties but kept going. It had failed to take that woods twice—and a colonel, commanding an adjoining regiment, said to a sergeant, commanding a flank patrol: "You are going to take it this time?" The sergeant said, "No, they will quit." The colonel was surprised, and said, "What do you mean by this?" The sergeant then explained: "This battalion has been in twice; they have suffered heavy casualties; they haven't had much sleep; food has been insufficient; but *the whole thing is:* back there is a battalion that has not been in at all, and our battalion feels that that battalion should have been put in."

The officer telling this said that those men had a feeling that injustice had been done to them. That feeling made them know that they were not going to stay in that woods, and within half an hour they began to come back. The officer telling this further said that there was no thought of mutiny and probably not even concerted action but just a feeling among the men that they had stood all the losses they should stand compared with other units in that same organization; so they quit. They had lost confidence in the *justice of their superiors*, and having lost that confidence they were done. They could and should have been told that the other battalion would later take its full share of action, but apparently their commander had neglected to make them feel or believe that justice was being done to them.

We might discuss other factors, but that is hardly necessary.

In building up and maintaining fighting spirit, a tabulation of some matters of concern to a division commander and his staff and the aims thereof might be:

Matters	*Immediate Aim*	*Eventual Aim*
1. Material (Food, Equipment, etc.)	1. Physical fitness	1. To arouse and maintain fighting spirit during training
2. Social (Mail, home ties, etc.)	2. Contentment of mind	2. To arouse troops to the highest combat pitch before battle
3. Spiritual (Bravery, sacrifice, will to win, etc)	3. Discipline	
	4. Conviction of purpose	

The sum of these may be said to be *esprit-de-corps*—that important but elusive thing that Napoleon indicated as being so important, when he said the moral is to the physical as three is to one.

The importance of *physical fitness* needs little, if any,

comment, but it does call for strict supervision of training schedules. As a nation, we may need to do more to build up physical fitness than we realize.

A man may be physically fit, but if he does not possess *contentment of mind* he cannot carry out his part in the most effective manner. Contentment of mind of the soldier is promoted by interest in his work and satisfaction in his accomplishments. Both may be added to greatly if he is made to believe and understand that every thing he is required to do increases his personal fitness to perform a part towards winning the war.

The chief aim of orders, commands, rules, regulations, and routine is obedience. Obedience exists when the soldier submerges his individuality and carries out willingly and unhesitatingly all orders received from his superiors and in the absence of orders, does what he believes would have been ordered had a superior been present. This is the obedience that makes *discipline*. A commander by his *prestige* and his efforts to be *just*, and his staff by upholding his prestige and his efforts to be just, can maintain high discipline and high *esprit-de-corps* in his units. By failing to do this the reverse is likely to be true.

Belief in the cause, or *conviction of purpose* strengthens the will to win. The supreme aim of the war is an important matter. Short slogans such as "Remember Pearl Harbor" are quite effective in building and maintaining conviction of purpose. Every individual in the military service must be imbued with the spirit of the offensive. This war will be won only in that way.

You as leaders are striving to teach your men *habits* that will work even under stress and strain. Teaching is accomplished by securing *attention;* by *riveting* interest, without which there will be little learning; by employing *imagination* to paint word pictures; and finally by employing *suggestibility* on the basis of affirmation, repetition, and last impression.

Teaching and training have as their ultimate aim success in battle. Administration of material matters will always claim a certain amount of attention. Troops must be organized so they may operate as units in a coordinated manner. They must be clothed, equipped, sheltered, fed, supplied, and their accomplishments recognized. Social and spiritual matters need constant thought and attention. The relative values of material, social, and spiritual matters undergo changes from time to time. Material matters loom large in training periods; spiritual matters assume much more prominence in time of battle.

Possible relative values of the material, social, and spiritual matters during the training period as compared with the period before or during battle would probably be on the basis of nine times as much attention to material matters and three times as much to social matters, respectively, as to spiritual matters in the training period. These values very probably might become altered, with nine times as much attention given to spiritual matters and three times as much to material matters, respectively, as to social matters before or during battle. The only merit claimed for presenting these assumed values is to emphasize the change from the training period to the battle period.

In order that a commander may arouse his troops to the highest combat pitch just before battle, one or more of the following conditions must exist:

a. The troops must believe their cause is just.

b. The commander must make himself the instinctive as well as the titular leader. His troops must have confidence in his judgment and skill, his justness, and his unselfish interest in them.

c. The troops must believe that the task ordered is not beyond their power, that they are superior to the enemy and will surely win the victory.

d. The troops must believe that the defeat of the enemy is of such importance that they will make any sacrifice to accomplish that result.

The manner in which any particular commander will produce results cannot be prescribed to him in advance as a formula. A leader will be constantly on the alert to observe and take advantage of any circumstances or condition of the moment that will rouse the troops to battle pitch. His greatest asset is CONFIDENCE, which is of the spirit.

Marlborough, on the eve of Blenheim, when reminded by his staff officers of the dangers of his undertaking, is reported to have said: "I know the danger, but a battle is absolutely necessary. I rely upon the bravery and discipline of the troops which will make amends for our disadvantages."

In the past we have had, and we still are having examples of great leaders dealing with spiritual matters in a way to arouse men to the highest combat pitch. Consider Admiral Nelson breaking out his flag signal of: "England expects every man to do his duty"; General Lee riding before a brigade and lifting his cap in salute to its bravery; and General MacArthur suggesting that officers stand as a tribute to the breath-taking bravery and audacity of the Igorotes on Bataan.

Men fight for leaders and die for leaders. The role of the commander and staff of a wartime division is to furnish the final spark that will arouse men to the highest combat pitch and cause the division to "go forward and give us victories."

Commandos

By

Major R. V. Boyle, *British Army*,
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It has long been an accepted principle that defence alone cannot win a war; so in the past months, when the United Nations have perforce been on the defensive throughout most of the world, the offensive exploits of the British Commandos have been a welcome tonic.

After Dunkirk and the collapse of France, Great Britain was left with little or no arms and equipment and was faced with the threat of an early invasion.

Such a prospect might well have daunted the staunchest nation, but under the dynamic leadership of Mr. Winston Churchill, the British decided that attack was the best form of defence. It was obviously impossible to launch an attack in force, either then or for a considerable time, but it was determined that however small the force might have to be, attacks must still be made.

After consideration it became clear that in view of the numerical weakness of any British force compared with the Germans, the attacks would have to be in the style of guerrilla bands; and because of the geographical situation of Great Britain the guerrillas would have to be amphibious.

Various names were considered for these guerrilla bands before "Commandos" was selected. During the South African War the Boers raised guerrilla bands, called, in Dutch, "Commando." These fought with extreme bravery and a considerable degree of success against the British, and the name became for ever associated in the British mind with daring guerrilla bands.

Thus was the name chosen, and it is interesting to recall that Jan Smuts, now a Field Marshal in the British Army, was the leader of one of the most successful Boer Commandos.

In the Campaign in Norway in 1940 the British had used, with marked success, a few "Independent Companies" to harass the advancing Germans. From these companies a Headquarters was formed, and some Commanding Officers and a few others were selected. Volunteers were then called for from all units of the British Army. From these volunteers the Commanding Officers selected personally the officers they wanted, and they in turn selected their Noncommissioned Officers and men. Thus from the very beginning the family spirit was fostered in each Commando.

One of the conditions in joining the Commandos is that the Commanding Officer has the right to return any man to his ordinary Regiment at any time without giving any explanation. This is essential in order that no individual, however good he may be, shall be permitted to upset the team spirit of the unit, which is so necessary. In the same way any man may claim to return to his old unit at any time provided he gives sufficient notice.

The Headquarters which runs the Commandos is responsible for their training to the Chief of Combined Operations, who is the head of the joint Service Organisation for amphibious operations. The administration of Commandos remains, however, under the War Office.

Each Commando is organised into a headquarters and a number of troops which, in their turn, are divided into sections. The size of these troops are based on the capacity of the landing boats which they will have to use so that complete units can be landed from any one boat.

The pay of an officer or man in a Commando is the same as for the rest of the Army but it was found that in most of those places where Commandos were stationed there was no suitable accommodation all together; so the troops are given an allowance of 8/6d. ($1.75) per diem with which to find their own food and accommodation. This method has three main advantages. Firstly, it inculcates a spirit of self reliance which is most important. Secondly, it ensures that no man has a complaint about his food or lodgings, as if it is not good he has only himself to blame. Thirdly, it enables the Commando to be moved without exciting comment and speculation such as would occur if they suddenly vacated a barracks.

Contrary to many stories, Commandos wear exactly the same uniform as the rest of the British Army, except that some of the Commandos have adopted a khaki colored bonnet in the Scottish style, whilst like all British Units they have a symbol on the sleeve of their coat denoting their own unit, as well as the word "Commando."

Basically the training of the officers and men of the Commandos is the same as for the rest of the Army—that is to say the first essential is that they shall be really good soldiers. After selection, men undergo a very rigorous medical examination. No possible form of weakness is allowed to pass. For instance, any signs of flat feet or a tendency to diarrhoea is sufficient for a man to be turned down.

After passing the medical examination a man is drafted to the Commando Depot and put into a squad according to the Commando for which he is destined. This is always the Commando of the officer who selected him, which thus fosters the unit spirit right from the start.

The course at the Commando depot begins with a toughening programme. Strenuous physical exercises, long marches, and swimming form a part of the programme which is interspersed with practical map reading and a considerable amount of firing practice.

Very early in the course are introduced two vitally important elements which play an increasingly important part throughout their training. These are night work and seamindedness. Such a great majority of Commando operations have to be carried out in darkness that it is essential that they should be as efficient in darkness as in daylight. As training proceeds, more and more work is done at night till the men develop almost a second sense. The necessity for this night sense has been shown over and

over again in operations as well as in training, and it is only by constant and continuous practice of actually living and fighting under night conditions that it can be achieved.

In the same way seamindedness can only be gained by close contact with boats, and considerable time is spent getting men accustomed to all types of boats and sea conditions. Their training starts with instruction in row boats, which is also an excellent method of hardening the men, and goes on to handling sailing boats and the special landing boats of the Higgins type. In addition, men are embarked on ships and live in them, thus becoming accustomed to naval life, naval expressions, and naval problems. This part of the training is extremely important, as during an operation the lives of many men will often depend on the quick and complete understanding which exists between the naval crews and the foot soldier.

Moving without being seen is a subject in which a standard well above the average is required, and theoretical instruction in stalking and camouflage is combined with practical exercises.

British Press Service

COMMANDOS SCALE A 100-FOOT CLIFF AT THE DOUBLE

Climbing rocky hills, scaling cliffs, and crossing gaps caused by the demolition of bridges has also to be learnt. A method of crossing gaps has been developed using a toggle and eye rope, and all ranks must be proficient in this.

The technique of street fighting is another subject in which instruction is given, as this is a type of warfare which requires much training and practice, and on which the time available for allotment in ordinary units, is far too little.

As the course progresses, practice in living "hard," i.e., forced marching, little or no food, water or sleep, becomes increasingly stiff. To live hard for a period of some days is a vital necessity for a Commando, and the ability to do so can only be got by continuous practice. Working and fighting on short rations and without adequate sleep is very largely a matter of becoming accustomed to such conditions.

On completing the Depot Course men are posted to the "Holding Wing" where their training is continued and enlarged until such time as a vacancy in their own Commando is available. This further training includes learning how to use the types of weapons in use by the enemy, a slight knowledge of explosives and the methods of using them, as well as courses in specialised subjects. Every man has to be really proficient in semaphore before he joins his Commando.

After joining his Commando, training as a unit is the most important theme though individual training still continues. Each Commanding Officer, indeed each Troop Commander, is free to train his men by whatever method he considers best, subject only to the men reaching the required standard. They are judged by results and not methods. More advanced courses are held at the Special Training Centre, and inter-Commando exercises are frequent. In addition, whole units live on board ship for days, and landings are constantly practiced.

Specialists, such as communication personnel and engineers, after leaving the Depot get special training and when a vacancy occurs, join their specialist group at Headquarters.

The planning of an operation takes place at Combined Operations Headquarters. It is well to stress here that organising any raid takes a great deal of time and work. Everything has to be planned down to the most minute detail and cannot be left to chance, with the result that raids cannot be laid on at a moment's notice.

First of all the objective is selected as a result of intelligence collected from service departments. The project is then considered, and a decision is made as to whether it is practicable. A decision in the affirmative may often be subject to provisos, such as sufficient air cover being available.

The staff next examine the intelligence available, call for any further information required, and recommend the forces required to carry out the operation.

The further information required may include information regarding phases of the moon, tides, currents and shoals, slope of the beaches, number and location of coast defence guns and enemy units, including reserves, factories, shipping, morale or a number of other points.

An outline plan can now be drawn up. As soon as the outline plan is approved, commanders of the forces are appointed as well as a supreme commander.

At this stage the special programme of training for the force is put into operation, whilst the detailed plan, communications plan, etc., is prepared.

As soon as the detailed plan is ready, joint orders to the Force Commanders from the Supreme Commander are issued.

Based on the Supreme Commander's orders a rehearsal of the Operation is carried out in detail. This and subse-

quent rehearsals may show up flaws in the orders and plans or suggest improvements, and any alterations required are then made and rehearsed.

There are a number of points which determine the date, and the length of time ashore which is available to a raiding party.

If it is desired to obtain surprise it is necessary to do the approach in darkness. Equally it is necessary that the raiding party shall be within the range of fighter cover on their return trip by daylight. The former requirement fixes the earliest time at which the party can land whilst the latter requirement fixes the time at which they must leave the enemy coast. It will usually be found that the period left for carrying out the task ashore is automatically a bare minimum.

The state of the tide, the phases of the moon and the slope of the beach must all be taken into consideration when selecting the date of an operation. As all the factors must be right at the same moment, it is clear that the number of days in any one month on which an operation is feasible are restricted enormously whilst even on the few suitable days the weather may be such as to rule out any landing operation.

It may be of interest to describe the system of command in a Commando Operation. The supreme commander is responsible for deciding whether the force shall sail at all and lays down, as a guide to the Naval and Military force commanders, certain principles to assist them whilst on passage. During the passage the Naval and Military Commander travel in the same boat. The Naval Commander is responsible for deciding whether, from a purely naval point of view, he is prepared to land the troops, whilst the Military Commander is similarly responsible for the Military point of view. If either is of the opinion that it would be unjustified to attempt to land, the craft will be ordered to return to the base.

A fixed time is given by which the soldiers must be re-embarked and any extension of this time can only be made by the Naval Commander on the request of the Military Commander. The decision to prolong the operation is therefore a naval one.

Accompanying each raiding party goes an Intelligence Officer to question, whilst they are returning to the bases, any prisoners which may have been taken, thus tackling them at the psychological moment when they are still shaken from their capture and their morale is at its lowest.

Arrangements are made to ensure a hot drink to the raiding party at the earliest possible moment after they

British Press Service

PRACTICE LANDING

are clear of the enemy coast—containers of hot sweet tea are often carried in the landing craft—and on arrival at their base every possible arrangement is prepared beforehand to give them a meal and a bed immediately on arrival.

Meanwhile a communique must be issued to the Press as early as possible to forestall rumours and false reports issued by the enemy. As soon as is practicable, therefore, the force commanders radio whether the operation has been successful, partially successful, or a failure. During the return passage the Commanders also give a brief outline report which is passed on to Combined Operations Headquarters immediately they reach their base. Detailed reports are made as soon as they have rested, but meanwhile the gist of the action can be issued.

Throughout this article reference has been made to Combined Operations H.Q. and it may be useful, therefore, to enlarge a little on the organisation and functions of this vital centre.

The offensive cannot be resumed by Great Britain on the Continent of Europe, as opposed to the Air over Europe, without undertaking an amphibious operation in which all branches of the armed forces play parts of equal importance.

The early realisation of this fundamental fact, increased by the evacuation of all our forces from France, led to the establishment of a Combined Operations Headquarters in London to coordinate those activities of all services which were directed towards amphibious operations. This Headquarters is responsible for studying all aspects of amphibious operations, for advice throughout all the stages of planning, for the training of the necessary soldiers, sailors and airmen, and for the development of all types of equipment specially required, including landing craft and aircraft, as well as for the tactical control of the Commandos.

Clearly no staff composed solely of soldiers or sailors or airmen could undertake such problems, as they cover all fields of activity of each service; and the implications or difficulties of the Army, for instance, would not be fully appreciated by a staff composed only of sailors. This Headquarters is made up, therefore, of a joint staff at all levels: that is to say that each officer has his opposite number of the other services, including Marines. A problem which starts with the Army, for instance, is handed to the opposite Naval, Airforce, and Marine officers to ensure that any effect that it may have on their side of the picture is considered before an answer is given. No one service is predominant.

But there are two objections to such an organisation which are likely to be raised.

Firstly—who is going to give a final decision in the event of disagreement, and secondly, doesn't this system cause vast delays. Let us take each in turn.

It is obvious that there must be someone who can give a final decision, and the head of the office is the Chief of Combined Operations. He is in a quite unique position as he is the only person who, apart from the King, holds rank in each service. He himself is a Vice Admiral, but he also holds the ranks of Lieutenant General and Air Marshal. This would be mere camouflage if this officer was not absolutely impartial and able to view the various intricate problems without bias towards one particular service.

Now as regards delay. No one is likely to question the fact that different services have different outlooks and problems, and until each service understands the problems of the others there is little hope of smooth and speedy working. By working in the same office, and for the same end, this understanding grows, and when once it is achieved there is no more delay in dealing with matters than in a purely Army Office. There would indeed be delays if there was not a joint Headquarters; and agreement could only be reached by interminable correspondence between the three service departments, or meetings between their representatives, each determined to stick out for his own Department's point of view.

This discussion on the controlling Headquarters may appear to be a digression from Commandos, but it must be borne in mind that Commandos are amphibious troops. Unless, therefore, there is real unity at the Headquarters there is no hope of real unity between the individual sub-units of the three services actually taking part in the operation.

To sum up. Commandos are an amphibious raiding force specially designed for the purpose. Their organisation has been built up to suit their tasks. Their training is basically that of any infantry soldier but they have to reach an exceptionally high standard and be proficient in a number of specialist subjects as well. They play a vitally important part in the preliminaries before invasion, but are not an essential ingredient in the invasion itself. Their success in any operation is entirely dependent on the very closest cooperation at all stages between all three services.

Initiative is doing the right thing without being told.

—From Elbert Hubbard's *Note Book.*

The Birth of an Infantry Division

By

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A modern young couple could not plan any more carefully for their first child than the War Department has planned for the birth of one of their new divisions.

First to be selected by the War Department is the commanding general of the new division and his two brigadier generals. These three general officers report to the Headquarters of the Army Ground Forces eighty-three days before D-day (D representing the date the birth of the division is to occur). Here the plans for the organization and training are discussed.

From Washington the three general officers go to the Quartermaster Motor Transport School where they spend five days in a short refresher course on motor transportation.

After this course the three split up—to meet again at the division camp in six weeks' time. The division commander proceeds to the Command and General Staff School at Fort Leavenworth, Kansas. There he is joined by his general and special staff officers for a refresher course. The assistant division commander goes to the Infantry School at Fort Benning, Georgia, for a refresher course with the officer cadre of the infantry of the division. The division artillery commander goes to the Field Artillery School at Fort Sill, Oklahoma, for a refresher course with the officer cadre of the artillery component of the division. All three of these refresher courses last four weeks; but the one at the Command and General Staff School starts a week before the others to permit the early arrival of the division commander and his staff at the division camp.

At the same time the refresher courses referred to above are in progress, the other components of the cadres are attending school as shown on the attached chart. During the school period, not only are the officers receiving instruction in the latest methods and technique; but, what is equally important, they are getting acquainted with those they will have to work and serve with and are able to plan for the work ahead.

With the completion of the school period, the scene shifts to the camp of the division. Thirty-eight days before D-day the division commander and staff arrive at their new home, and from then until D — 23 the cadre and remainder of the officer complement arrives as shown on the chart.

This time, from D — 38 to D-day, is a period of organization and preparation. Officers and enlisted cadre must be assigned to units. Equipment must be distributed as it arrives. Schools must be conducted to prepare instructors for the coming training. Plans must be made for the reception of enlisted men. Training programs must be prepared. Policies must be established.

Throughout this period, labor is a big problem. There are plenty of mess sergeants and cooks, but few KP's. There are motor sergeants and mechanics, but few truck drivers. As a result, it is not uncommon to see lieutenants driving trucks and sergeants peeling potatoes. In some camps, the higher headquarters have come to the assistance of the division and have attached truck companies and salvage companies during this period.

On D-day the remainder of the enlisted men for the division start arriving—11,985 in all. These men arrive direct from reception centers at the rate of approximately one thousand a day. They are without military training, having only been classified and clothed during their brief stay in the various reception centers. From D-day to D+15 the division's primary concern is the reception and assignment of these enlisted men. They must first be met and distributed to the various organizations where their qualifications are required. This is a job for personnel experts who must have been trained and rehearsed in their work prior to D-day. The different divisions have arrived at various solutions to this problem. In at least one division it was solved in the following manner: Classification teams met the incoming trains at least two hours out of the camp. On the train they went over the classification cards and made a breakdown of the men to regiments and separate organizations. Upon arrival of the train at camp the men were sent to regimental areas where they were assigned to companies and batteries. By this method all men reached their companies within two hours after the train arrived in camp.

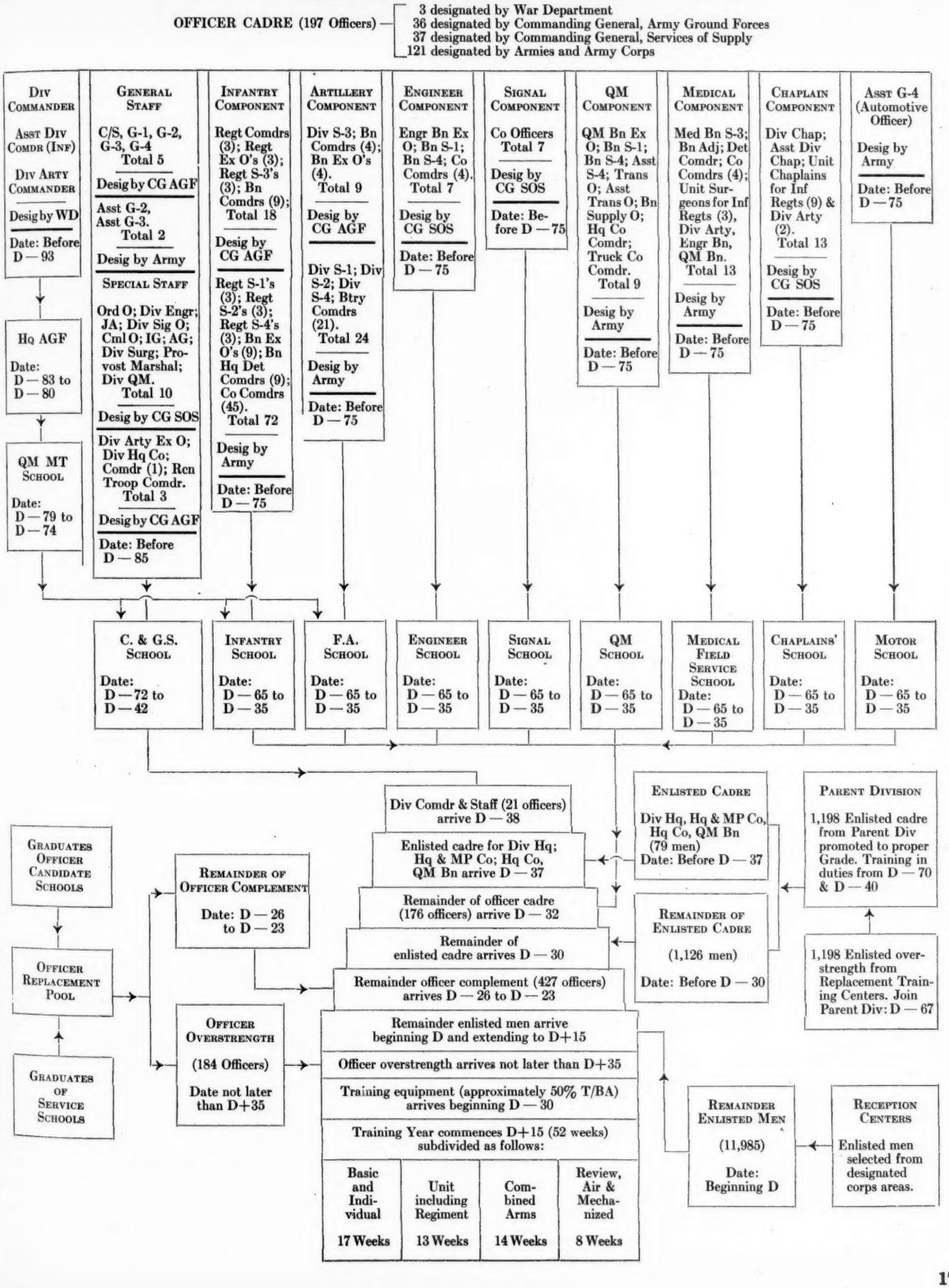
During this 15-day period, inoculations were completed, articles of war read, individual equipment issued, and as much basic training as possible given. Aptitude tests for drivers and radio operators were given to as many as possible during this time. Certain training films whose understanding required no previous military training were found to be of value during this period. These were shown each day to new groups.

On D + 15 the real training of the division starts. This training covers a period of fifty-two weeks and is divided into four periods.

The first period of seventeen weeks includes, with some modification, that basic, individual, and small unit training prescribed in the War Department mobilization training programs. While all mobilization training programs are designated to cover 13 weeks, this period has been extended to 17 weeks in order to take care of the possibility that filler replacements may be received over a period of the first four weeks, to provide against a probable shortage of authorized equipment, and to allow a period of one week for tests at the end. In addition, large maneuvers and observations of training during the 1941 training year clearly demonstrated that basic individual and small unit training should progress more slowly and with greater thoroughness. During this first 17 week period, training will not go beyond the battalion.

The second training period lasts 13 weeks. This is the "unit training period," and carries the training up to include the regiment and separate units. The objective is to develop each unit into a fighting team capable of taking its place in

BUILDING AN INFANTRY DIVISION


OFFICER CADRE (197 Officers)
3 designated by War Department
36 designated by Commanding General, Army Ground Forces
37 designated by Commanding General, Services of Supply
121 designated by Armies and Army Corps
Div Commander
Asst Div Comdr (Inf)
Div Arty Commander
Desig by WD
Date: Before D — 93
Hq AGF
Date: D — 83 to D — 80
QM MT School
Date: D — 79 to D — 74
General Staff
C/S, G-1, G-2, G-3, G-4 Total 5
Desig by CG AGF
Asst G-2, Asst G-3. Total 2
Desig by Army
Special Staff
Ord O; Div Engr; JA; Div Sig O; Cml O; IG; AG; Div Surg; Provost Marshal; Div QM. Total 10
Desig by CG SOS
Div Arty Ex O; Div Hq Co; Comdr (1); Rcn Troop Comdr. Total 3
Desig by CG AGF
Date: Before D — 85
Infantry Component
Regt Comdrs (3); Regt Ex O's (3); Regt S-3's (3); Bn Comdrs (9); Total 18
Desig by CG AGF
Regt S-1's (3); Regt S-2's (3); Regt S-4's (3); Bn Ex O's (9); Bn Hq Det Comdrs (9); Co Comdrs (45). Total 72
Desig by Army
Date: Before D — 75
Artillery Component
Div S-3; Bn Comdrs (4); Bn Ex O's (4). Total 9
Desig by CG AGF
Div S-1; Div S-2; Div S-4; Btry Comdrs (21). Total 24
Desig by Army
Date: Before D — 75
Engineer Component
Engr Bn Ex O; Bn S-1; Bn S-4; Co Comdrs (4). Total 7
Desig by CG SOS
Date: Before D — 75
Signal Component
Co Officers Total 7
Desig by CG SOS
Date: Before D — 75
QM Component
QM Bn Ex O; Bn S-1; Bn S-4; Asst S-4; Trans O; Asst Trans O; Bn Supply O; Hq Co Comdr; Truck Co Comdr. Total 9
Desig by Army
Date: Before D — 75
Medical Component
Med Bn S-3; Bn Adj; Det Comdr; Co Comdrs (4); Unit Surgeons for Inf Regts (3), Div Arty, Engr Bn, QM Bn. Total 13
Desig by Army
Date: Before D — 75
Chaplain Component
Div Chap; Asst Div Chap; Unit Chaplains for Inf Regts (9) & Div Arty (2). Total 13
Desig by CG SOS
Date: Before D — 75
Asst G-4 (Automotive Officer)
Desig by Army
Date: Before D — 75
C. & G.S. School
Date: D — 72 to D — 42
Infantry School
Date: D — 65 to D — 35
F.A. School
Date: D — 65 to D — 35
Engineer School
Date: D — 65 to D — 35
Signal School
Date: D — 65 to D — 35
QM School
Date: D — 65 to D — 35
Medical Field Service School
Date: D — 65 to D — 35
Chaplains' School
Date: D — 65 to D — 35
Motor School
Date: D — 65 to D — 35
Graduates Officer Candidate Schools
Officer Replacement Pool
Graduates of Service Schools
Remainder of Officer Complement
Date: D — 26 to D — 23
Officer Overstrength
(184 Officers)
Date not later than D+35
Div Comdr & Staff (21 officers) arrive D — 38
Enlisted cadre for Div Hq; Hq & MP Co; Hq Co, QM Bn arrive D — 37
Remainder of officer cadre (176 officers) arrive D — 32
Remainder of enlisted cadre arrives D — 30
Remainder officer complement (427 officers) arrives D — 26 to D — 23
Remainder enlisted men arrive beginning D and extending to D+15
Officer overstrength arrives not later than D+35
Training equipment (approximately 50% T/BA) arrives beginning D — 30
Training Year commences D+15 (52 weeks) subdivided as follows:
Basic and Individual 17 Weeks
Unit including Regiment 13 Weeks
Combined Arms 14 Weeks
Review, Air & Mechanized 8 Weeks
Enlisted Cadre
Div Hq, Hq & MP Co, Hq Co, QM Bn (79 men)
Date: Before D — 37
Remainder of Enlisted Cadre
(1,126 men)
Date: Before D — 30
Parent Division
1,198 Enlisted cadre from Parent Div promoted to proper Grade. Training in duties from D — 70 & D — 40
1,198 Enlisted overstrength from Replacement Training Centers. Join Parent Div: D — 67
Remainder Enlisted Men
(11,985)
Date: Beginning D
Reception Centers
Enlisted men selected from designated corps areas.

the division team and fulfilling its own particular role in battle. While the program provides for some review of individual and small unit training covered in the previous period, the emphasis is to be placed on the training of companies, battalions, and regiments and on the training of technicians.

The third period of 14 weeks is devoted to "combined training." It includes training in the combined arms and at least one maneuver of a division against a division. Additional unit training is to be conducted concurrently. The objective is to weld the several units into a division team capable of acting as a concerted whole and maintaining itself under any and all battle conditions.

The fourth period of 8 weeks is for a review and additional training in defense against air and mechanized attack. It is during this period that unit commanders may iron out rough spots and correct deficiencies in training that have shown up during the preceding training periods. It is, in general, a polishing up period for the training of the division.

In addition to their own training, these new divisions must develop and train a cadre for still newer divisions to be formed in the future. It will be noted on the chart that an officer overstrength arrives not later than D + 35. This overstrength is equal in number, less chaplain component, to the officers originally detailed as the cadre. A part of the overstrength of each division will be reserve officers who held peacetime assignments to the same division. These officers will be sent to Service Schools prior to joining their divisions.

Although Marshal Bazaine had some 40,000 men, a state of guerilla warfare was adopted by Juarez with which the French troops were able to cope with difficulty and were put on the defensive much of the time. The seasoned veterans of the battlefields of Europe and Algiers were unaccustomed to the guerilla warfare of the Mexicans and were much blamed by the people at home, first for their difficulty in reaching the capital, and secondly for the necessity of having such a large force to keep down the opposition, this force constantly requiring replacements.

—The Mexican Empire of Napoleon III.

The British Navy Keeps That Nelson Touch

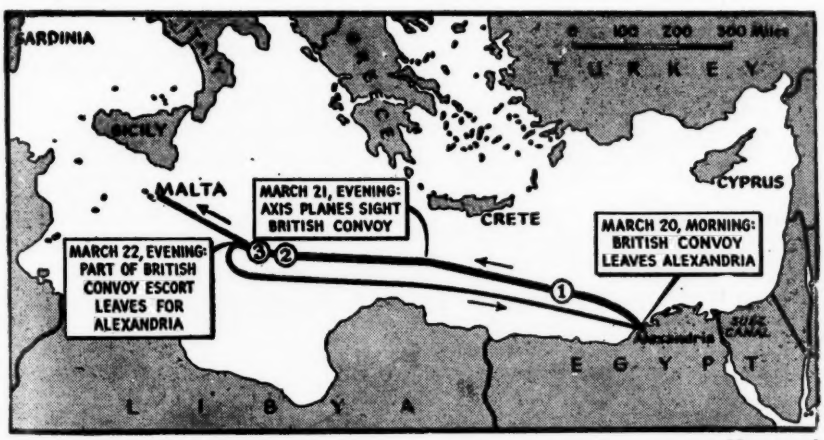
From an article by

ADMIRAL WILLIAM V. PRATT, *U.S.N. Retired*

(Reprinted from and through the courtesy of *"Newsweek,"* April 16, 1942)

The spectacular sea battle which occurred March 22, when a heavy Italian force attacked a convoy bound from Alexandria to Malta, was the reverse of a Singapore. The operations conducted by Rear Admiral Vian had the Nelson touch.

An attempt is made in the drawings on this page to portray the composition and size of the British and Italian forces, their dispositions, and details of the actions which took place about 240 miles south of the toe of the boot of Italy. The British cruiser involved carried twelve 6-inch guns, the antiaircraft cruisers ten 5.25-inch guns. The Italian battleship mounted nine 15-inch guns, the heavy cruisers eight 8-inch guns, the light cruisers eight 6-inch guns. All destroyers carried 4.7-inch guns and torpedoes. The British cruising formation, from which the battle deployments were made, was arranged in this instance, as in many others, to provide protection from air and submarine attacks during the voyage.

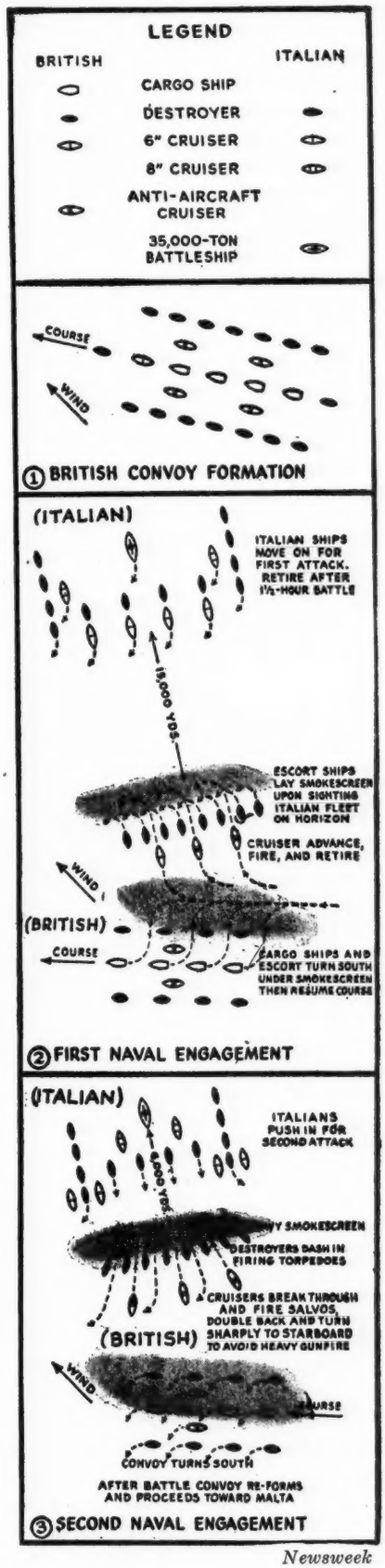


Newsweek

All went well until dusk March 21, when the convoy was spotted by Axis planes flying from Libya to Crete. Early Sunday morning, March 22, the bombers came over. They intensified their attacks during the sea battle Sunday afternoon, about 150 participating. Air assaults continued March 23 and 24. At 2:25 PM Sunday, four Italian cruisers hove in sight on the starboard hand, followed shortly by the rest of the fleet. Vian was then up against it. The convoy had to be safeguarded at all costs. Air and submarine defense had to be provided. Flanking attacks by light cruisers and destroyers had to be anticipated. Night torpedo attacks by destroyers were to be expected.

But the immediate danger lay in gunfire from the heavy Italian warships to the north. The complexities of the situation forced Vian to divide his forces, and rely on two sound tactical principles, evasion and offense. A canny destroyer man, he knew the value of the smoke-screen in evasion. He knew also how battleship men dread a daylight torpedo attack delivered under cover of a smoke-screen. So he took advantage of this fear, dashing north with a part of his force to stave off the impending heavy gun attack from the north, while he sent the rest scurrying south with the convoy. Fortunately the wind, being from the south and east, favored Vian's tactics.

The engagement lasted all Sunday afternoon. At dusk the Italian Fleet withdrew. Italian destroyer tactics remained purely defensive. No night torpedo attack was delivered. Damage to British naval forces was not serious, and casualties were few. Two Italian cruisers were damaged—one seriously—and a 35,000-ton battleship was hit by a torpedo. All components of the British expedition displayed courage, seamanship, and tactical efficiency. All the cargo ships got through safely except one sunk in an air attack March 23. The antiaircraft cruiser demonstrated its value. And the battle was an example of what light forces can do when handled with daring and efficiency against superior enemy surface and air strength.



Newsweek

Our System of Evacuation in the Combat Zone

BY

COLONEL HENRY P. CARTER, *Medical Corps*
Instructor, Command and General Staff School

I. PURPOSE.—This article intends to give a broad, general picture of the evacuation of battlefield casualties as it would be undertaken by the Medical Department with the facilities available under present conditions.

II. MISSION.—To preserve the strength of the fighting forces, and to contribute to the success of the military operation.

How is this to be accomplished?

First, by prompt collection and evacuation of the casualties, and second, by sorting and treating them so that they may become valuable replacements as trained combat personnel.

III. CHARACTERISTICS OF EVACUATION.—This activity resembles the difficult tactical operation of withdrawal, only the evacuation is accomplished "against traffic," as troops and supplies are constantly being sent forward in the combat zone to replenish the needs of the front line units. During evacuation, care and treatment of each disabled individual must constantly be observed by the medical personnel, and this is frequently performed during hours of darkness.

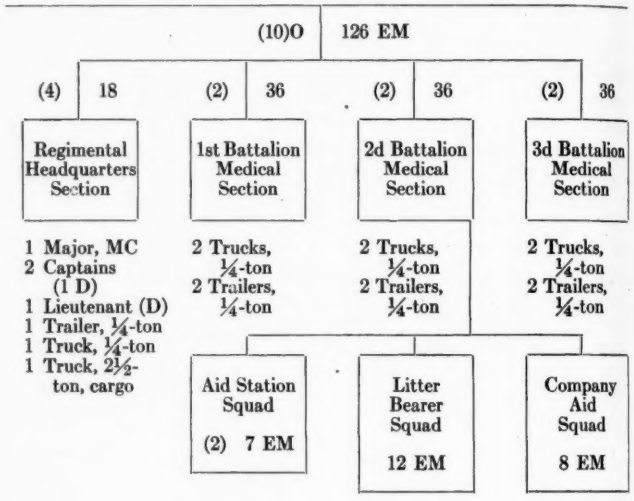
IV. MEANS AND METHODS OF EVACUATION.—*a.* In the division area of the combat zone, there are two agencies of evacuation: the Unit Medical Service of line regiments and battalions, and the Division Medical Battalion, which evacuates unit aid stations. These are called respectively: 1st and 2d Echelons of Evacuation. When ambulances of army medical regiments clear the division clearing stations, that is called the 3d Echelon of Evacuation, the responsibility for which rests with Army.

b. The Unit Medical Service is carried out by the several medical detachments with line regiments and battalions, the largest detachment being that with the infantry regiment. These detachments are integral parts of their regiments and battalions, as provided for in tables of organization. FM 100-10 says "Efficient operation of the medical service is a function of command. Medical units (detachments) are assigned or attached to enable the commander to carry out this responsibility." Therefore, the commanding officers of line regiments and battalions (unit commanders) are responsible for the initial treatment, collection, and evacuation of the casualties of their units to their respective unit aid stations. They are also responsible for the training, transportation and tactical employment of these detachments.

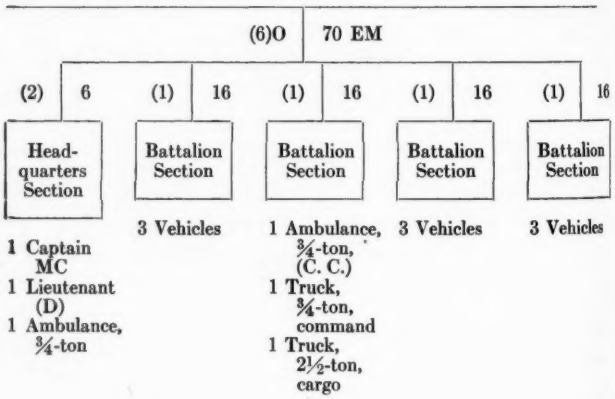
The medical detachments of the infantry division are shown in the table on this page.

Personnel, equipment, and transportation have been found adequate during field exercises, although there may be slight modifications recommended by the Surgeon General's Office to meet combat conditions. These medical detachments are equipped to render the necessary medical service in camp, on the march, and in combat by taking care of the sick and injured. Ambulances will be assigned

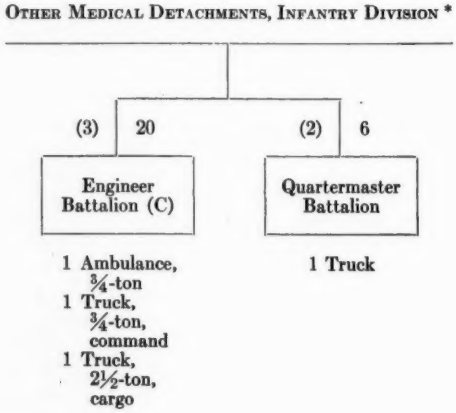
MEDICAL DETACHMENT WITH INFANTRY REGIMENT (RIFLE) (War)* T/O 7-11



MEDICAL DETACHMENTS WITH DIVISION ARTILLERY (War)* T/O 6-80



OTHER MEDICAL DETACHMENTS, INFANTRY DIVISION *



* Integral component of the basic unit. Renders unit medical service. These units have medical field equipment for aid stations.

temporarily by the Division Surgeon from the Division Medical Battalion, an entirely separate unit, for the collection and evacuation of cases considered unfit for combat. In combat, the company aid men, especially trained in first aid work, will be with their respective infantry companies and artillery batteries to apply first aid treatment to all wounded as quickly as found on the battlefield. The casualties are brought in to the aid stations by the litter bearer squads.

The aid stations for each of the battalions of line and service troops are established when indicated, and are as near the troops served as is compatible with their proper operation. Two medical officers and seven enlisted men operate the battalion aid station. The ideal site for the station is 300 to 500 yards from the front line and behind the localities where the bulk of casualties will be found. Aid stations, battalion and regimental, should have shelter from small-arms fire, should be on the line of drift of the wounded, should have protection from the elements (if available), and should have access to covered routes both to the front and to the rear. The station moves forward as the battalion advances, keeping in close contact and covering the zone of action of the battalion. Patients, with medical attendants, may be left at the old station site to be picked up later by ambulances from the medical battalion.

V. Division Medical Battalion (Triangular).—*a.* The medical battalion of the triangular division is the evacuating agency of the division, and its organization is shown in the following chart:

Medical Battalion of the Infantry Division (War)† T/O 8-65

(35)O 487 EM

Division Surgeon's Office‡

Medical Inspector, Division Dental Officer, Division Veternary Officer, Office Executive.

(5) 6 EM

3 Vehicles

Battalion Headquarters (4)	Headquarters Detachment (4) 53	Company "A" (Collecting) (5) 101	Company "B" (Collecting) (5) 101	Company "C" (Collecting) (5) 101	Company "D" (Clearing) (12) 128
CO Ex O S-3 Adj	3 Trks, ¼-ton 1 Trlr, tank 1 Trk, command 2 Trks, ¾-ton 9 Trks, 2½-ton 1 Trk, 2½-ton (winch)		12 Ambs, ¾-ton 1 Trlr, tank 1 Trk, ¼-ton 1 Trk, command 1 Trk, ¾-ton 3 Trks, 2½-ton 1 Trk, 2½-ton (winch)		3 Trlrs, tank 3 Trks, command 1 Trk, ¾-ton 14 Trks, 2½-ton 2 Trks, 2½-ton (winch)

† This is a divisional unit for the evacuation of aid stations established by the several medical detachments listed above. All divisions (cavalry, motorized, and armored) have similar medical battalions (squadron with cavalry division). The division surgeon's office will probably be separated from the medical battalion.

‡ The Division Surgeon's Office is not an integral part of the Medical Battalion, but is a Section of the Division Headquarters.

The personnel, equipment and transportation of the medical battalion is considered adequate for the job it is designed to perform. It is completely motorized and is highly mobile. The Headquarters Detachment performs the general supply service for all of the companies of the medical battalion and provides the clerical personnel for the administrative work of the battalion headquarters. The commanding officer of the detachment, under direction of the Division Surgeon, is the medical supply officer for all of the medical detachments of the division listed above. A rolling reserve of about three days essential medical supplies for combat are carried by this detachment for all units of the division. Refills are obtained from an army medical depot normally located back at the division railhead.

b. The Collecting Companies are the real evacuating units of the medical battalion and are organized to support in action each of the three (3) combat teams of the division. Each of the three collecting companies is a complete unit administratively and can perform its combat mission by establishing a collecting station and evacuating forward aid stations by litter bearers or ambulances. It is an important link in the chain of evacuation and medical supply.

The charts (I and II) accompanying this article are schematic and represent situations which may be found when the infantry division (triangular) has been committed to combat, with all of its three combat teams deployed in a so-called close envelopment. Three collecting stations have been established, each about one mile in rear of the front line. Sites for these stations must possess all the good features listed for the battalion aid stations, such as good cover and concealment, defilade, located on lines of drift and near the casualty density area, having routes to front and rear, water, etc. The company keeps up with the division in moving situations.

Supporting the collecting stations and evacuating them are certain ambulance relay posts (see chart I), located two or three miles further to the rear along suitable roads leading from the front to the rear. The bulk of the ambulances of the medical battalion are thus dispersed and concealed from enemy observation. As loaded ambulances proceed from the collecting stations to the clearing station farther to the rear, empty motor ambulances then go forward to replace them. This is called "ambulance shuttle," and is quite effective in the evacuation of forward stations. Under cover of darkness the ambulances can and do go as far forward as the regimental and battalion (line) aid stations to pick up loads of casualties, which procedure speeds up evacuation and reduces the slow and exhausting work of transporting the wounded on hand-carried litters.

c. The clearing station of the division is set up by the clearing company of the medical battalion some six to eight miles to the rear, and its function is to sort and clear the casualties of the division, returning to duty those fit for full duty and transferring all others (except the dead) to a medical unit of a higher echelon, usually the army evacuation hospital fifteen to twenty miles farther to the rear, which evacuation is handled by the army medical regiment —on call.

It is desirable to locate the clearing station beyond the range of medium artillery fire of the enemy, and the site selected should be on a good route both to the front and to the rear and still be within reasonable distance of the col-

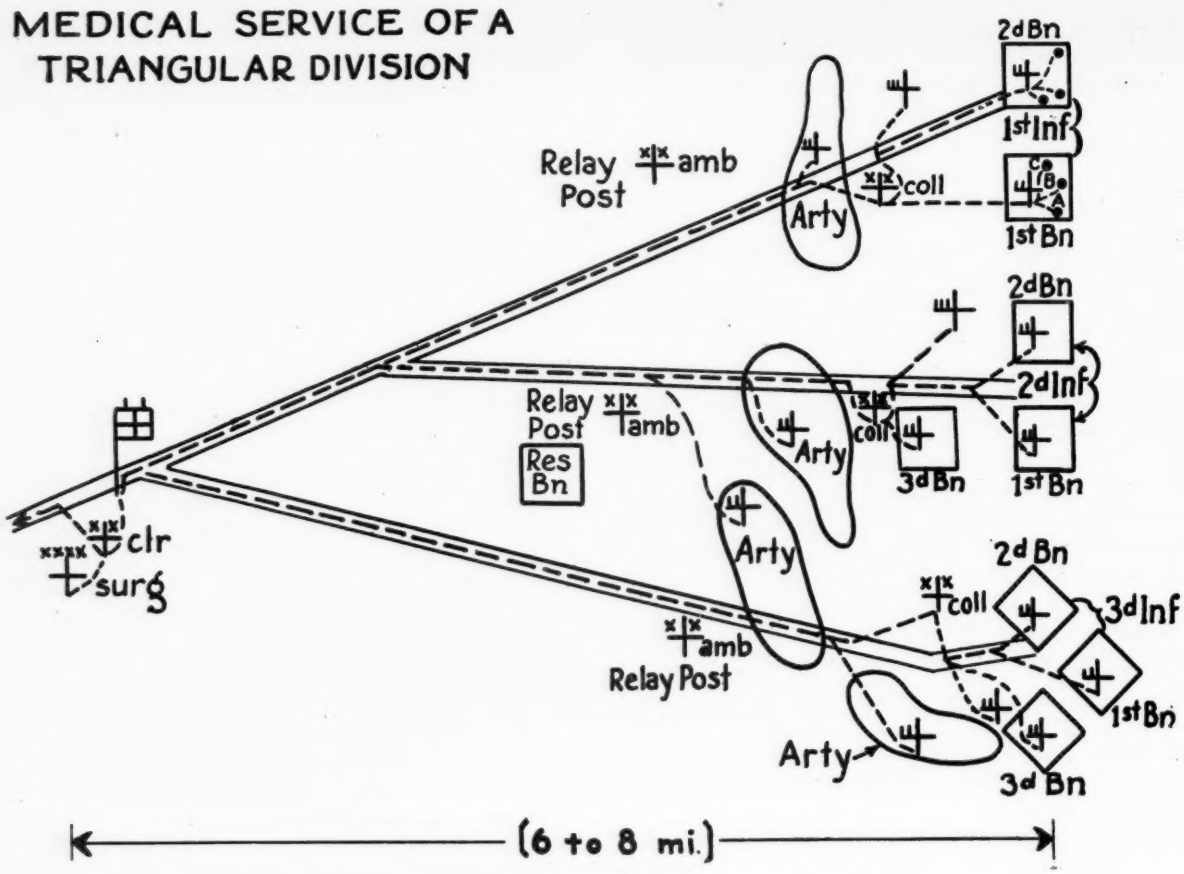


CHART I

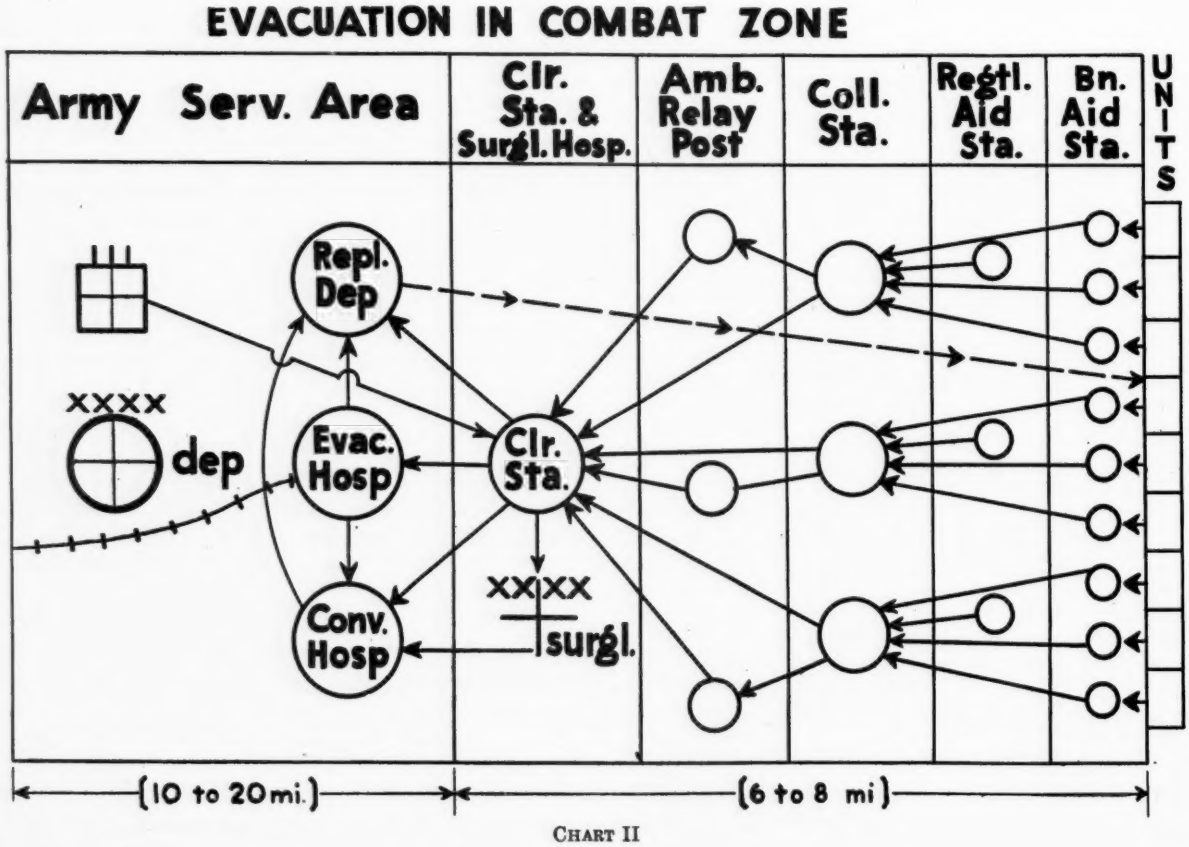


CHART II

lecting stations of the medical battalion. It will require sufficient area for complete establishment, preferably in a village with buildings for shelter and with water, sewerage, and electric lights if available. Initially, these stations are concealed from enemy observation; however, after the action has been started, they may be located openly but at some distance from military units which might attract bombing. Then these stations should be plainly marked with large white crosses.

When the ambulance haul becomes excessive, these stations are displaced forward. Occasionally there may be two of these stations established by the one clearing company of the division—one behind the main effort in a wide envelopment, and one behind the secondary attack. Casualties are given temporary care and emergency treatment and prepared for evacuation to the rear as rapidly and safely as possible. In charts I and II will be noted a mobile surgical hospital (an Army unit) which has been sent up from Army to be established near the clearing station in order to take care of the very seriously wounded who cannot be moved without jeopardizing the lives of the patients, the so-called "non-transportable" cases. Once established, this unit does not move so rapidly as the clearing station of the division, because of the condition of the patients it handles. This unit may be equipped in large motor vans or trailers. Surgical teams with anesthetists, nurses, and surgical technicians are found in this unit.

VI. ARMY MEDICAL SERVICE.—This consists of an Army Surgeon's Office, certain medical regiments, evacuation hospitals, surgical hospitals, one convalescent hospital, a laboratory, a medical supply depot and a veterinary company (see Chart II). These units furnish the evacuation and hospitalization system throughout the Army Service Area of the Combat zone by giving the necessary medical attendance to army troops, by reinforcing the medical service of the several army corps and divisions, and by evacuating casualties from all of the clearing stations of the army corps and divisions to the evacuation hospitals where they are hospitalized pending their recovery, removed to fixed General Hospitals on hospital trains of the communications zone, or sent to the zone of the interior (home).

It will be noted that the Army Corps is not normally a link in the chain of evacuation from division to army installations unless acting independently, in which case it takes over certain army functions, after being augmented by the higher echelon with ambulance companies, surgical and evacuation hospitals.

VII. GENERAL PRINCIPLES OF EVACUATION.—*a.* Efficient operation of the medical service is a function of command.

b. The medical service must be continuous, regardless of the location or employment of the troops.

c. Freedom of action of combatant troops must be maintained by the prompt evacuation of casualties.

d. Sick and Wounded must be evacuated only so far to the rear as may be necessary.

Chemical Warfare

BY

CAPTAIN NELSON J. ANDERSON, *Chemical Warfare Service*

Regardless of treaties that exist between the belligerents of the world, no nation dares assume the attitude that preparation for chemical warfare can be neglected. The information we have concerning the amount of preparation by the Axis for chemical warfare urges us to promote our own efforts in this direction. Our enemies are well equipped with chemical agents and well prepared to use them; thus, it is perfectly possible that gas warfare may burst into full intensity at any moment. In this connection General Porter, Chief of Chemical Warfare Service, states:

"This war will never be really 'all out' until gases once more flood the battlefields."

Thus far in the present European conflict, poison gas has not been used; but incendiaries and smoke have been extensively employed. In Africa, the Italians resorted to mustard gas in the Ethiopian Campaign. In China, the Japanese were reported to have used poison gas. Up to the present time, the Germans have not considered it advantageous to them to use poisonous agents. Until the time of their great reverses in Russia, the Germans had been engaged in aggressive advances which were often made rapidly in a lightning-war manner that did not offer the prospects of gaining great advantages by using poisonous agents. The Germans were accomplishing their missions without poison gas. In Russia, they expect to advance again, perhaps under circumstances that will not be conducive to the use of poison gas. However, if Hitler sees an opportunity to make a gigantic, overwhelming stroke with gas, he can hardly be expected to hesitate.

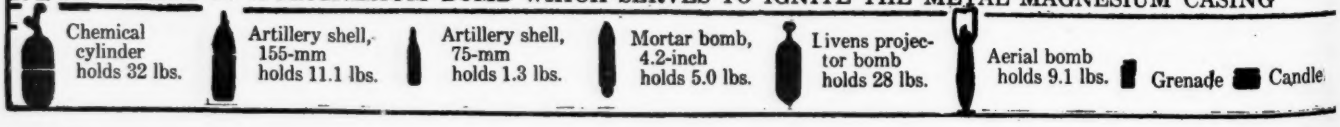
In one particular field of chemical warfare, incendiaries, the Germans have already made extensive progress and wide application since the beginning of the present war. They have developed the so-called "electron bomb" which is probably the most efficient incendiary bomb that has ever been devised. It is cylindrically shaped, has a length of about fourteen inches, a diameter of two inches, weighs 2.2 pounds, and contains a few ounces of thermite. It has a thick-walled eighty percent magnesium shell which is light and combustible. Unlike the "thermite bombs" of the last war, thermite in the modern electron bomb serves only to ignite the magnesium shell. The thermite reaction within the shell is set off by an igniter on either the nose or the tail of the shell. Unlike other types, the electron bomb does not explode on impact; instead, the thermite reacts violently for about a minute at a temperature of approximately 4500 degrees F. Jets of flame are emitted from vents in the shell, and bits of molten and burning particles which are forced through these holes scatter in every direction for a distance of about fifty feet. This scattering ends when the thermite is consumed. However, by that time the magnesium shell has been ignited

REFERENCE AND TRAINING CHART — CHEMICAL WAR

SYMBOL	NICKNAME	NAME	FORM	BANDS COLOR	LOADING	ODOR	TACTICAL CLASS	PHYSIOLOGICAL EFFECT
HS	Hot Stuff	MUSTARD (DI-CHLORDIETHYLSULFIDE)	Gas	2-GREEN		Garlic Horseradish Mustard		Burns skin or membrane. No immediate effect
MI	Mustard Imitator	LEWISITE (CHLORVINYLDICHLORARSINE)	Gas	2-GREEN		Geraniums		Irritates nasal passages. Later skin burns; poison
ED	Enemy's Delight	ETHYLDI-CHLORARSINE	Gas	2-GREEN		Biting Stinging		Causes blisters, sores; paralysis of hands
PS	Puking Stuff.	CHLORPICRIN (NITROCHLOROFORM)	Gas	2-GREEN	+CG + CN	Fly Paper Anise		Causes severe coughing, crying, vomiting
DP	Di-Phos	DIPHOSGENE (TRICHLORMETHYL CHLOROFORMATE)	Gas	2-GREEN		Ensilage Acrid		Causes coughing, breathing hurts, eyes water; toxic
CG	Choky Gas	PHOSGENE (CARBONYL CHLORIDE)	Gas	1-GREEN		Musty Hay Green Corn		Irritates lungs. Causes increasing doped feeling.
*CN (CNS)	Cry Now	CHLORACETO-PHENONE	Gas SOLUTION	1-RED		Apple Blossoms		Eyes smart, shut tightly, tears flow; Temporary
CA	Cry Always	BROMBENZYL-CYANIDE	Gas	1-RED		Sour Fruit		Eyes smart, shut, tears flow Effect lasts some time
DM	Dirty Mixture	ADAMSITE (DIPHENYLAMINE CHLORARSINE)	Gas	1-RED	(+CN)	Coal Smoke		Causes sneezing, sick, depressed feeling
HC	Harmless Cloud	HC MIXTURE	Smoke	1-YELLOW		Sharp Acrid		Harmless
FS	Fuming Spray	SULPHUR TRIOXIDE (IN CHLORSULFONIC ACID)	Smoke	1-YELLOW		Burning Matches		Causes prickling of skin, flow of tears
FM	Floating Mantle	TITANIUM TETRACHLORIDE	Smoke	1-YELLOW		Acrid		Harmless
DA	Dopey Ache	DIPHENYL-CHLORARSINE	Smoke	1-YELLOW		Shoe Polish		Causes sick feeling and headache
WP	White Phos.	WHITE PHOSPHORUS	Smoke	1-YELLOW		Burning Matches		Burning pieces adhere to skin, clothing
†TH	The Heat	THERMIT (THERMITE) (MAGNETIC IRON OXIDE AND ALUMINUM POWDER)	Incendiary	1-PURPLE		Odorless		5,000 degree F heat ignites materials
CL	Chlorine	CHLORINE	Gas	1-GREEN	+ PS + CG	Highly Pungent		Lung irritant

* CNS, A SOLUTION OF CN IN CHLOROFORM AND CHLORPICRIN, FREQUENTLY USED FOR SHELL FILLING

† THE FILLING OF A MAGNESIUM BOMB WHICH SERVES TO IGNITE THE METAL MAGNESIUM CASING


Chemical cylinder holds 32 lbs.
Artillery shell, 155-mm holds 11.1 lbs.
Artillery shell, 75-mm holds 1.3 lbs.
Mortar bomb, 4.2-inch holds 5.0 lbs.
Livens projector bomb holds 28 lbs.
Aerial bomb holds 9.1 lbs.
Grenade
Candle

FARE AGENTS Prepared by Lt. Col. Walter P. Burn, C.W. Res.

PROTECTION	FIRST AID	COLOR & STATE LOADED	COLOR & STATE RELEASED	PERSISTENCE	TACTICAL USES	FIELD NEUTRALIZATION
	Remove clothing. Wash affected parts of body with gasoline, soapy water. Do not bandage.	Heavy dark, oily liquid	Liquid slowly evaporates	Open 1 day, Woods 1 week to all winter	To neutralize areas. Counterbattery. Attack on personnel.	Cover with bleaching powder & earth 3% Sol'n of Na_2 S
	Wash with oil, hot water, soap. CUT AWAY small area of flesh. 5% solution of NaOH. Apply Ferric Hydrate paste.	Dark green, oily liquid	Slowly evaporates	Open 1 day, Woods 1 week	Similar to Mustard.	Wash down with water. Cover with earth. Alcohol. NaOH spray
	Wash with gasoline, hot water and soap	Clear oily liquid	Evaporates at medium rate	1 hour	Counterbattery. Preparation fire. Harassing fire.	Cover with earth, caustic, NaOH solution
	Wash eyes; keep quiet and warm. Do not use bandages	Yellow oily liquid	Colorless gas	Open 6 hours; Woods 12 hours	Harassing fire.	Na_2 SO_3 — Sodium Sulfite in alcohol solution
	Keep quiet and warm. Give coffee as a stimulant	Colorless liquid	Colorless gas	30 minutes	Harassing fire.	Alkali
	Keep quiet and warm. Give coffee as a stimulant	Colorless liquid	Colorless gas	10 to 30 minutes	Surprise attacks, projectiles. Gas cloud release. For quick physical effect.	Alkali
	Wash eyes with water or boric acid. Do not rub or bandage. Wash skin with 4% Na_2 SO_3 in 50% Alcohol Solution	Brown crystalline powder	Cloud of small, solid particles	10 minutes	Training. Mob control. CNS used in counterbattery to force mask wear.	Strong, hot solution of Sodium carbonate
	Wash eyes with boric acid. Do not bandage.	Dark brown oily liquid	Slowly evaporates	Several days (weeks in winter)	To neutralize areas. Counterbattery.	Alcoholic Sodium hydroxide spray
	Remove to pure air and keep warm and quiet	Yellow-green granular solid	Yellow smoke	10 minutes	Gas cloud attacks. Mob control.	Bleaching powder solution
NONE	Produces no effect requiring treatment	Grey solid	Grey smoke	While burning	To screen small operations in own lines and for training purposes.	None needed
	Wash with Soda solution	Clear liquid	Dense white smoke	5 to 10 minutes	Airplane spray for screen on broad front.	Alkaline solution
NONE	Produces no effect requiring treatment	Yellowish liquid	White smoke	10 minutes	Screening operations	None needed
	Remove to pure air; keep quiet. Sniff chlorine from bleaching powder bottle	White crystalline solid	Vapor or fine smoke	Summer 10 minutes	Harassing fire	Bleaching powder solution
NONE AVAILABLE	Wash with Copper Sulphate Solution or immerse in water	Pale yellow solid	Burns to white smoke in air	10 minutes	To screen advancing troops. Cause incendiary effects, losses. Harass enemy observers.	Burns out
COVER WITH EARTH, SAND	Treat for severe burn	Metallic powder	White-hot metal	5 minutes	Destruction of materiel.	Quickly cover with earth or sand
	Remove from gassed area. Keep quiet and warm. Coffee as stimulant	Yellow liquid	Yellow-green gas	10 minutes	Surprise attacks (cloud).	Alkaline solution

Airplane spray
Hospital casualty agent
Field casualty agent
Smoke screen
Incendiary agent
Gas mask
Gas-proof clothing

and burns for ten to fifteen minutes at a temperature of nearly 2400 degrees F., setting fire to any combustible material within a radius of a few feet. From one to two thousand of these bombs can be carried in a bomber plane.

The 2.2 pound electron bombs are used only for indiscriminate bombing; whereas heavier bombs of similar construction, weighing from about four to fifty pounds, are used when specific targets such as factories, supply bases, and munition dumps are attacked.

Several methods of extinguishing or controlling the burning of electron bombs have been developed. Among the various methods is one that makes use of a "snuffer," a cup-shaped bucket large enough to cover the burning bomb completely, which shuts off the air and suppresses combustion. Another method is to shovel dry sand on the bomb. Usually, sand does not completely extinguish the bomb, but glare and heat are reduced until it is possible to move both the sand and the bomb into the open where it can burn itself out without any serious danger. Of particular interest is the method in which water is used to control burning bombs. If the burning bomb is suddenly flooded with water, there will be an evolution of hydrogen gas which is likely to explode violently. On the other hand, if a stream of water is directed—say at the rate of about one and three-fourths gallons per minute—to the seat of the fire and a surrounding spray wets the area near the bomb, the combustion can be controlled. Water accelerates the buring so that a 2.2 pound electron bomb will be completely consumed in three minutes or less, and the water also reduces the spread of fire. Special apparatus has been manufactured for the purpose of extinguishing the electron bomb by means of water, but it can be accomplished with an ordinary garden hose.

Protection against incendiary bombs is only one of many problems in chemical warfare defense. To be ready for any eventuality, the law of the land charges the Chemical Warfare Service with military problems relating to the fields of poison gases, screening smokes, and incendiaries. The functions of the Service, however, have been expanded beyond the bare outline of the law; today the Service is the adviser of both the War and Navy Departments on all matters pertaining to chemical warfare and many problems of chemical manufacture pertaining to national defense. To this end, the Chemical Warfare Service and the American Chemical Society are cooperating. The President of the American Chemical Society has appointed a group of some twenty distinguished members annually to assist the Chemical Warfare Service in carrying out its mission. This committee is known in common parlance as the Advisory Committe of the American Chemical Society. It meets from time to time to study the problems of the Chemical Warfare Service and to offer its suggestions generously. Much of the success that the Chemical Warfare Service has achieved in meeting the urgent problems of National Defense during the past two years is due to the American Chemical Society as an organization and to the individual members who have given so freely of their time and information.

These important assistants aid the Chemical Warfare Service by laying the foundation for its work, which is divided into (1) research, (2) development, (3) procurement, (4) manufacture and supply of chemical warfare equipment and materials, and (5) training in chemical defense and in combat functions to include the offensive use of chemical weapons and agents. The last of these is unusual in that it is the only combat function with which an army service is charged; all other combat functions are responsibilities of the arms. On account of demands from these varied activities, the officer personnel includes not only men with chemical training, but also men who are well versed in all forms of military art.

In accomplishing the mission of the Chemical Warfare Service, the responsible personnel have attained important results. When the present emergency began, research and development was far enough advanced to start production as soon as funds were made available. One result has been that all personnel of our expanded Army were provided with training masks, for there were enough of them on hand in October 1941 to meet necessary requirements.

The research organizations at Edgewood Arsenal have been greatly supplemented recently by invaluable aid from the National Defense Research Committee. Through this organization the best chemical talent in the country has been made available. Dr. James B. Conant, renowned scientist and president of Harvard University, heads the organization. The Chemical Warfare Service has recently set up a development laboratory at the Massachusetts Institute of Technology. With the cooperation of that institution, the Chemical Warfare Service will be able to continue working on many problems which the facilities there make available.

Accomplishments made possible by cooperative efforts to formulate plans are due in no small degree to the military personnel assigned to specific tasks. This personnel has also rendered other valuable assistance. The Chemical Warfare Service, for instance, is conducting training classes for firemen and other civilian workers in the defense of cities against incendiary attacks.

Viewing the United States military forces in a broad perspective in order to see where chemical warfare troops are to function, some plans are found to be taking shape. According to FM 101-10, the field army is assigned the following chemical warfare Units: three decontamination companies, one depot company, one laboratory, one impregnating company and one maintenance company. The decontamination companies are prepared to neutralize vesicants (substances that blister the skin) and other chemical agents. The depot company handles the rather difficult chemical warfare supply problems. The maintenance company repairs chemical warfare material in the combat zones and keeps equipment operating in the best condition possible. This work is so important that it may be necessary to assign more than one such company to a field army. The impregnating company treats contaminated clothing to make garments wearable and impregnates ordinary uniforms with chemicals which give the wearers increased protection against vesicants. The field laboratory, provided with portable chemical and physical equipment as well as with a technical library, operates in the advanced zone of the Theater of Operations. The personnel of this unit analyzes enemy chemical agents and munitions so that army commanders can be informed with the least possible delay as to what protective measures should be taken.

The chemical agents most likely to be used offensively by an enemy and against which our military personnel are being trained to defend themselves are those shown on the accompanying chart. The colors designate tactical classes of agents: green is for agents producing hospital casualties; red, for harassing agents; yellow, for screening smokes; and purple, for incendiaries. In three cases there is overlapping of the tactical classes: white phosphorus not only produces a screening smoke, but may also be a casualty agent and an incendiary; diphenylchlorarsine is both a screening smoke and a harassing agent; chlorpicrin may produce hospital casualties or function only as a harassing agent. Colored bands which correspond to the tactical class are painted on munitions and on the containers of chemical agents. One green band is used for containers of phosgene and chlorine because they are nonpersistent agents; however as the others of the casualty producing class are persistent, they are marked with two bands. A chemical agent is classed as persistent if it remains in the air where released in effective concentration for more than ten minutes; if no longer than ten minutes, nonpersistent. In other respects it appears that the chart is self explanatory.

Whether all these chemical agents and other new ones will be used in the present world conflict will probably depend on whether the Axis groups take the initiative. If they do, the United States proposes to be ready. Furthermore, it will be necessary to take the offensive in order to win the war. If Hitlerism is to be defeated we must do more than follow its pace making, we must plan to win by some greater application of technical means than is possible by the enemy, and our research continues with this prospect in mind. New factories are being constructed which will increase our production of chemical agents. Two new chemical warfare arsenals are being built. Cooperation with the artillery and the air corps to work out methods of disseminating chemical agents in offensive war is under way. The Chemical Warfare Service provides technical personnel trained so that they may discover or develop improvements useful in all branches of the Military Service. This is a total war in which scientific discoveries and applications are fundamentally essential.

The Organization of Supply in the Army Rear

By

Major General A. Karyakin, *Russian Army.*

All Army transport, truck and animal drawn, is assembled and located within 3 or 4 kilometers of the railhead in the Army base. It delivers supplies to division distributing points for distances of 60 kilometers or more. Such distances are covered in one stage by trucks and in two by animal transport. When roads are bad, in wet weather, reliance is placed on animal transport. In the case of the right group, 100 trucks and 800 four-wheeled, animal drawn carts were used to haul a daily tonnage of 250 metric tons. One-half of the carts were based at the railhead and the other half about midway between the railhead and distributing point. Thirty trucks and 200 carts were used to supply the left flank. The daily load for this group was 500 metric tons.

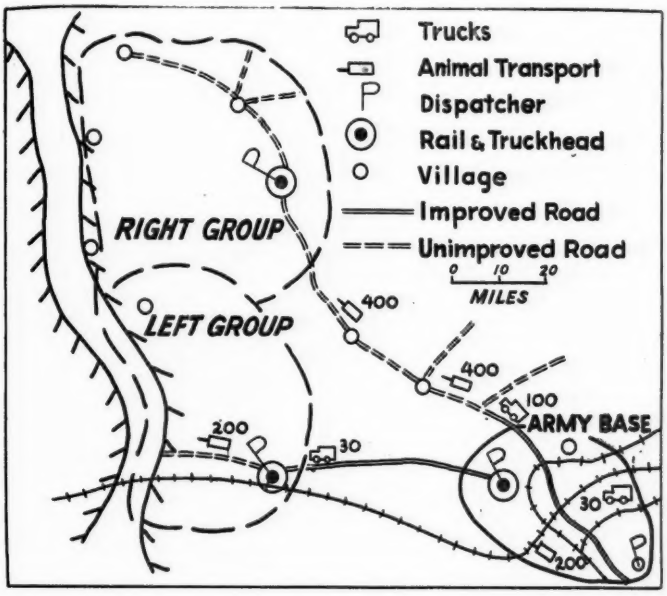
The left group also used a railhead for a distributing point for some of its supplies. This group required daily: ammunition—100 metric tons, rations—250 tons, gasoline—150 tons. The right group required daily: ammunition—50 tons, ration—100 tons, gasoline—100 tons.

Thirty trucks and 200 carts were kept in reserve near the Army railhead, for emergencies.

At the railhead, distributing points and motor park for the reserves, are dispatchers' posts consisting of 2 to 3 men. All requisitions are sent to the dispatchers. These may come either directly from the unit making the requisition or from Army Headquarters.

Whenever a dispatcher receives a requisition he calls for the necessary transport and gives the train commander an order slip which contains the following information:

(1) The route
(2) The load
(3) The time loading schedule



(4) The time en route and unloading
(5) The place to report near the front after unloading
(6) The cargo to bring back on the return trip
(7) The time of arrival at the railhead.

Supply transportation is used for various purposes on the return trip. Namely, to bring back wounded, return empty ammunition boxes and miscellaneous cargo.

This method of supply has been in use for four months and was successful even where the roads were very bad.

From *Krasnaya Zvezda*

Barrage Balloons

By

Lieutenant Colonel William H. Kendall, *Coast Artillery Corps*, S-1 and S-3, Barrage Balloon Training Center; and Captain Ralph H. Redford, *Coast Artillery Corps*, Assistant S-3, Barrage Balloon Training Center.

General

Barrage balloons are man's latest defense against hostile aircraft; their purpose is to protect relatively small areas from destruction—power plants, bridges, railroad yards, ship yards, and factories. They have no fire power, no armor, little mobility; they carry no crew. Their effectiveness lies in their ability to force pilots to fly at an altitude favorable to our own antiaircraft guns, and in the positive destructive action of their cables against hostile aircraft. Bomber pilots have become aware that a series of barrage balloons is a most formidable obstacle when they are out to bomb a specific target; hence they have a tremendous morale value (1) by throwing the hostile pilot into a state of high nervous tension—the fear of the unknown—in that he cannot *see* the cable, and when skies are overcast, he never knows that he has seen *all* of the balloons; and (2) by instilling into our own troops and civilians a justifiable feeling of security which allows them to pursue their normal tasks unhampered by a constant dread of air attack.

During the first World War, the French used barrage balloons to protect important buildings—army headquarters at Chalons-sur-Seine and steel mills at Nancy. The English experimented with a steel net suspended by three balloons about five hundred yards apart. This network of steel cable was designed to enmesh enemy planes and bring them down. The balloons were sent up in series, holding one huge network of steel. This proved unsuccessful. The Italians used barrage balloons in a manner similar to the present system to protect Venice and its shipping. The Americans used balloons solely for observation, utilizing the Caquot French balloon. At the end of the war, we had seventeen balloons of our own manufacture at the front. We had one hundred ninety balloon companies in service, of which about ninety were at the front.

Ballonet Type Balloon Being Walked to the Winch by the Balloon Crew.

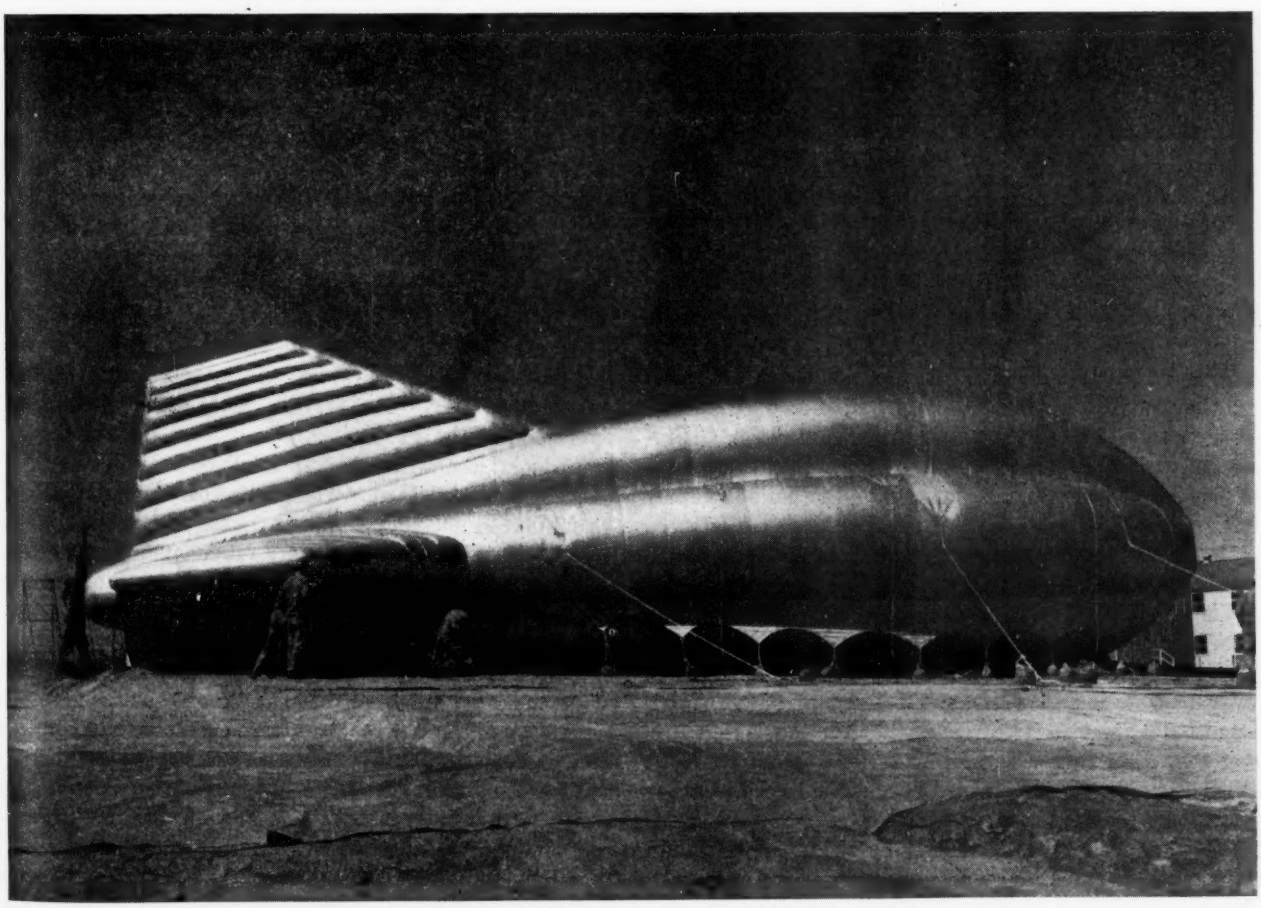
Our modern balloon is flown separately and is equipped with only one cable, which is attached to the balloon by means of rigging and is paid out from a winch. The various ropes that dangle from the present-day balloon are mainly for the purpose of ground handling—they form the rigging by which the balloon may be ground-maneuvered and bedded down. The damage to aircraft is done by the anchoring cable and any lethal devices that may be attached.

Classification

Barrage balloons may be classified into three general types: high altitude balloons, low altitude balloons, and very low altitude balloons. The three different classifications of balloons may be either of the dilatable or the ballonet type. The dilatable type balloon envelope is a single cell. The envelope is of a four or more lobe design held in this shape by a series of elastic cords, known as expansion cords, which tie across opposite grooves for practically the entire length of the envelope. As the balloon ascends, the lifting gas expands, the cords elongate, and there is an increase in volume of the envelope. On descending, the lifting gas contracts, the tension on the elastic cords is reduced, and the volume of the envelope is reduced. In construction of the envelope, the panels are joined to form gores which are subsequently joined to form the envelope.

The ballonet type balloon is divided into two chambers, gas and air, separated by a diaphragm. The diaphragm forms the partition between the gas and air chambers of the balloon and is attached to the envelope proper at approximately one half the distance between the equator of the balloon and the bottom of the envelope. It is so designed that when the ballonet compartment is full of air, the diaphragm at its uppermost point will reach the equator line and when the compartment is empty it will lie along the floor of the envelope. In the envelope construction, the panels are joined to form rings which are subsequently joined to form the envelope. As the balloon ascends, the lifting gas expands and depresses the ballonet diaphragm, forcing the air from the ballonet out through the air valve in the bottom of the envelope. On descending, the lifting gas contracts, and when the pressure of the wind exceeds the pressure in the ballonet, the air enters through the ballonet air scoop, maintaining the external shape of the balloon. During ascent, the expansion of the lifting gas forces the air from the ballonet until it is empty, and the diaphragm lies against the envelope. If ascent continues after the ballonet is empty, expansion of the lifting gas continues, increasing the internal pressure in the gas compartment. To prevent the pressure from becoming dangerously high, an automatic gas valve is provided on the side of the envelope to permit the escape of the gas.

The envelope of the very low altitude balloon is approximately thirty to thirty-three feet in length and ten to twelve feet in diameter, as compared with the low altitude balloon which is approximately seventy-five to eighty-five feet in length and thirty to thirty-five feet in diameter, and the high altitude balloon which is approximately one hundred ten to one hundred twenty feet in length and thirty-five to forty-five feet in diameter. All three types of balloons are con-



Dilatable Type Balloon Bedded Down.

structed of two-ply bias, neo-prene-coated, long-staple cotton fabric. At present, experiments are being conducted in an effort to produce a more durable, lighter fabric so as to give the balloon more lifting power.

There are several schools of thought as to what color a barrage balloon should be. One school maintains that the balloon should be painted a color which would make it less noticeable and make it easier to camouflage. Another says that it should be painted a heat repellant color such as aluminum so that the bag will not absorb the sun's rays thus causing "super heat," and this same group maintains also that a light color will make the barrage more successful because the pilot will more readily see some of the balloons of the barrage and divert his attack. These questions are under consideration at the present time.

THIS PICTURE SHOWS THE ELASTIC SHOCK CORDS ON THE INSIDE OF A DILATABLE TYPE BALLOON.

ORGANIZATION

The basic tactical unit for barrage balloons is a separate battalion. This separate battalion consists of forty-three officers and 1,106 enlisted men. It operates both tactically and administratively. The separate battalion is made up of four batteries: a headquarters battery, containing a service platoon which furnishes weather data, operates the inflation gas service section, and maintains the balloon repair section; and three lettered batteries A, B, and C. A lettered battery consists of an operations platoon and two balloon platoons, each platoon containing nine balloon squads. A battery is organized to operate eighteen balloons. Thus a battalion has control of fifty-four balloons. These balloons may all be bedded down, or all or any part may be flying at whatever altitude is desired.

Each battalion has its own weather section which furnishes the weather forecast to all batteries. It is important that this section be highly trained because it is the weather data received which determines whether or not the balloons fly and at what altitude it is safe to fly them. A battalion maintains and operates its own hydrogen generating plant. It is the responsibility of this section to see that inflation gas in sufficient quantities is always present at the balloon sites. Each battalion maintains and operates a rigging and fabric repair section. If a balloon is shot down or damaged, this section repairs the balloon, if possible, and places it back into service. The battalion supply section must at all times have balloons on hand that can be placed in service.

A balloon squad is required to prepare and maintain the site upon which the balloon is located. This site is the area which contains the balloon bed, winch position, the ascension point, and the balloon maneuvering area. It is desirable that a balloon site have an area at least a hundred yards in diameter and clear of all obstructions above the ground which might damage the balloon. Within this area is constructed the balloon bed, the dimensions of which depend upon the type of bed constructed. The balloon squad must be able to keep its balloon flying at the required altitude at all times. This means that if the balloon is lost or destroyed, a spare balloon must be placed in flight without delay.

TACTICS

A balloon barrage consists of the personnel and equipment necessary to fly a given number of balloons in one area for the protection of that area. The size, location, and presence or absence of natural obstacles to avenues of hostile air attack, as well as the presence or absence of antiaircraft gun defenses, will determine how many and what types of balloons will be required. As a rule, however, the desired minimum number of balloons in a barrage to protect a small objective is thirty-six. The defense of a large area may call for a hundred or more balloons.

For defense against dive bombers, barrage balloons must be clustered closely about the defended area, leaving however, sufficient spacing between balloons to avoid entanglement of the cables in shifting winds.

During air raids, each balloon squad at each site in a barrage must be able to fly its balloons at the required altitude, or to quickly close-haul or bed down its balloon in order to give precedence to other weapons or methods of defense, or to allow friendly airplanes to enter the area.

The next higher command, when more than one battalion is required to defend an area, is the group. The group is set up mainly as a tactical organization and consists of thirteen officers and ninety-three enlisted men but has no balloons organically. The geographical location will to a great extent determine the requirements, responsibilities, and functions of the group.

Each balloon site is connected by telephone to the Battalion Command Post. The Battalion Command Post may be connected to Group Command Post or directly to the Antiaircraft Control Headquarters. This communications net makes it possible to pass commands from the Antiaircraft Control Headquarters direct to the balloon site with the least possible confusion and delay.

Situations at port of embarkation and other locations along the coast line require that balloons be flown from boats, barges, or piling platforms. Here the matter of communications becomes more difficult and requires the use of two-way radio from site to shore.

There is at present under consideration a mobile barrage balloon battalion which would handle the very low altitude balloon. This battalion could be used to protect troop and supply columns, defiles, river crossings, and similar hostile bombing objectives against strafing by enemy aircraft.

Conclusion

The maintenance and operation of barrage balloons is new to the armed forces of the United States. We have received from the British a great deal of advice as a result of their recent experiences. Barrage Balloon work is now emerging from its embryonic stage, and though there is still a great amount of development yet to be made before reaching perfection, serviceable, usable, and effective balloons and related equipment are now in the hands of well-trained organizations. Experience has proved that barrage balloons can be and have been effective against hostile aircraft. By further research and actual experience, American ingenuity will prove that the barrage balloon is an important weapon against hostile aircraft.

Military Government

By

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Instructor, Command and General Staff School.

The swift movement of modern war poses a problem for combat troops to a degree unheard of in the days of stabilized fronts—the problem of enemy civilians. The sweeps of mechanized and motorized forces, the wide areas suddenly involved in conflict, and the difficulties inherent in complete evacuation of a population, all combine to leave large numbers of the inhabitants in the zone of action of a combat unit. It is prescribed that, while hostilities continue, none of the duties of military government should devolve upon the tactical commander; yet he still has the job of controlling these civilians.

In such a situation, the commander of combat troops will take such measures as are necessary for the security and protection of his unit. He cannot, nor is he expected to, undertake the detailed regulation of the civil community. His primary attention will be directed to his tactical mission, and the steps he takes to control civilians will be such as to enhance the success of that mission. In taking them, he follows the fundamental principle that every act of military rule must further the successful outcome of military operations.

This basic consideration must underlie the instructions issued by the civil affairs section of the theater staff for the guidance of tactical commanders in their dealings with civilians. These rules should be drawn to assist the combat troops in executing their mission, and not primarily to facilitate the subsequent establishment of organized military government.

Normally, in a region where active combat is in progress, the leading elements of the tactical units will be little hampered by the movement of enemy civilians. Those who remain in the area will be largely hiding from the fire of ground arms; those who evacuate hamper their own forces more than the invader, because of their direction of flight and their dispersion in fear of an armed enemy. However, the tactical commander knows, to some extent in the forward areas and to a greater degree in the rear of his zone, that enemy civilians may obstruct his mission. They may attack his troops, impede troop or supply movements, or hamper his efforts by sabotage and destruction. His training and experience will indicate the active security measures to be taken; his instructions should assist him to put them into effect.

The combat troop commander will know, for example, that he can impose curfew as one means of preventing obstruction of his troops. However, he should have advice from the theater staff as to the best means of publicizing and enforcing this curfew, and know the theater commander's policy on the trial and punishment of offenders against the regulation.

The civil affairs section of the theater should assist the combat commanders by such measures as preparing a proclamation establishing military government for the entire district where fighting is in progress. This proclamation, approved by the theater commander and distributed to the divisions printed and ready for posting, provides a speedy and effective method by which the troops can make known the existence of military rule. To accompany it, placards should be prepared setting forth brief and simple rules for the populace—curfew, blackouts, and so on—and warning of punishment for hostile acts. With these posters should go instructions to troop commanders outlining the best ways of bringing the rules to the attention of the people, pointing out the advantage of posting them at a municipal building, making civil officials or police responsible for disseminating their terms, and so on. The instructions must be guides rather than rules; situations vary so widely that higher echelons should not prepare inflexible regulations for the troop commanders to follow.

Divisions and corps, and even armies, will have no time for complex and detailed regulation of enemy territory within their zones of action. Efficient control for them, must be simple; they have neither the opportunity nor the personnel to consider exceptions to the general rules, and such exceptions complicate enforcement. It may be desirable for example, to exempt certain officials from a general regulation restricting circulation, but the combat unit cannot undertake such exemptions. First, it lacks the personnel to set up and administer an office to consider applications. Second, when a rule forbids all civilians to pass certain limits, sentries and patrols know at once that everyone who goes beyond them is an offender. If there be any civilians to whom the regulation does not apply, enforcement is complicated by the necessity of examining passes and determining identities.

The theater commander should also announce policies for the guidance of his subordinates on such matters as trials, punishments, and reprisals under the Rules of Land Warfare. These also should be general in scope, and the responsibility of the combat troops limited to those war

crimes where prompt action and punishment are necessary. The rules of land warfare recognize that there are many such occasions, and present trends towards participation by whole peoples in resistance and sabotage indicate that combat commanders must often deal with such crimes. Instructions from the theater commander should give tactical units the power and responsibility to take swift retaliatory action whenever this is essential to preventing a repetition of outrages against them, but such instructions should not burden them by requiring that punitive action be taken against lesser offenses.

There can be no definite time of transition from the first phase of military government, when fighting is going on in the district, to the second phase when fighting has ceased in that area. It is probable, however, that the first phase will be considered to exist as long as a district remains within the combat zone. The civil affairs section of the staff of the theater commander will ordinarily establish and administer military government when the area to be governed becomes part of the communications zone, which will mark the beginning of the second phase.

The military government in this second phase will supervise all functions of the civil government in the region. Although these will vary widely from the simple maintenance of security and order in primitive territories to the complex regulation necessary in highly developed countries, a discussion of the latter will develop all the problems which military government will encounter.

In the establishment of organized military government, any plan must conform to the basic policies of military necessity, welfare of the governed, economy of effort, flexibility, and permanence.

The fundamental and primary policy is that of military necessity already cited, which requires that every act of military rule must further the successful outcome of military operations. To insure this, the theater commander who is responsible for the success of military operations must have full control of the military government, and must also have separate personnel to administer it and so relieve the tactical units of the responsibility.

Secondary only to the foregoing, the welfare of the people should be the aim of the military government. Just and considerate treatment of the conquered people will mitigate a natural resentment against the conqueror and do much to allay the hatred which often inspires war crimes. With the well-being of the populace in mind, changes in existing laws and customs should be avoided, and no alteration should be made in existing political division boundaries.

Economy of effort requires that the government be administered with a minimum military personnel. To accomplish this, all possible use should be made of incumbent civil personnel so far as it can be relied on to perform its duties loyally and efficiently. This use will be facilitated by avoidance of changes in existing institutions as discussed in the preceding paragraph.

Flexibility of the plan is required in order to allow alteration as necessary to meet changing tactical and strategical situations, while permanence must be secured for the duration of the occupation by planning a system which will avoid frequent changes of personnel or of policy.

The officer in charge of civil affairs on the staff of the theater commander will establish and handle the military government of the entire theater in accordance with the policies of the commanding general. The civil affairs section will be organized into departments which will advise the officer in charge on matters relating to their specialties and act as his staff in their relations with his subordinate administrative officers. The nature of the country and the amount of reliance which can be placed upon local civil officials will determine the number of departments required in the theater civil affairs section. A type organization will contain nine departments—public works and utilities, fiscal, public health, education, public safety, legal, communications, public welfare, and economics.

In a large theater, the administration would be conducted for each state or province by an administrative officer responsible to the theater civil affairs officer. Each administrative officer in turn would then have an officer in charge of each political division corresponding to an American county, this latter named officer to have under him another who would supervise each city except the very small ones.

The retention of existing civil officials and employees, and of all possible laws and customs, will have an important bearing on the organization of the military government and on the number of military personnel required. Conformance with the normal political divisions of the conquered country will provide convenient administrative units, and will facilitate contacts with and control through the civil officials. In any country, especially if it has a well-organized civil service, all possible contacts with the people should be made through such of their own local leaders as may be relied upon to do their work loyally and efficiently. The maximum use of executive and judicial officers and employes will greatly reduce the demands upon military personnel and provide a more efficient means of dealing with the inhabitants.

Those officials who refuse at first to perform their duties may be willing to do so after it is pointed out to them that their services will not involve military operations against their own country but will aid their own people by retaining an organization to which they are accustomed. If they still continue to refuse, policy in each case will decide whether they should be compelled to serve.

Both in planning and operating the military government, the theater officer in charge of civil affairs will consult with other members of the theater staff. This coordination is especially important in the department of public safety, which ties in closely with G-2 and the provost marshal general. The G-2 section, for example, establishes policies with regard to censorship and collaborates with the civil affairs section in preparing regulations to enforce it.

The responsibility of the public safety department for maintaining order and preventing crime among the civilian population makes its position an extremely important one: yet it does not have charge of any troops to insure obedience to its rulings. Regulations imposed upon the civilian population will be enforced by the civilian police, over whom the public safety department has control, but if they prove incapable or unwilling to enforce them, the department must call upon the local provost marshal or the provost marshal general for assistance.

While at first glance it would seem that the civil affairs section should have military police to enforce its government, the principle of economy of force does not indicate that a separate military police force for military government alone is desirable. A large city under such government might be the location of a general service depot, regulating station, rest area, or other installation which would entail the presence of troops in the area and require military police to control traffic and maintain order among army personnel. Efficiency and economy both indicate the advisability of a single military police force to carry out all functions, one upon which the military government could call for assistance.

Occasions may arise where widespread unrest or revolt in a district may necessitate garrisons of combat troops or military police battalions to maintain order. In such cases the theater commander will prescribe the organization; the troops may operate under the local civil affairs officer, or his section may be subordinate to the troop commander for the duration of the emergency.

As soon as possible in the second phase of military government, ordinances should be published for the regulation and guidance of the people. These will advise the inhabitants of any suspension of normal laws, and of any new rules promulgated by the military authorities. In general, they will set forth those things which people have been permitted to do but which are now forbidden, and those things which they have not done but are now required to do.

Civilian violators of the civil and criminal laws of the community will normally be arrested by civilian police and tried by the regular courts. Offenders against regulations of the military government may be apprehended either by civil or military police and will ordinarily be tried and punished by military tribunals. These tribunals are of three types: military commissions, superior provost courts, and inferior provost courts. A military commission is, in composition and procedure, comparable to a general court martial, while the provost courts consist of a single officer and proceed like summary courts martial.

Their resemblance to courts martial appears again in their appointment; military commissions and superior provost courts are appointed by the officer in charge of a state or province or higher echelon, while inferior provost courts may be appointed by such officers and also by administrative officers in charge of lower echelons of military government. The powers of punishment of these courts vary; an inferior provost court is limited to a sentence of confinement at hard labor for one month, or a fine of $100, or both, and a superior provost court to six months or $1,000, or both, while a military commission may impose any lawful and appropriate punishment, including life imprisonment or death. However, no sentence of a military commission shall be carried out until approved by the appointing authority or his successor, while the sentence of a provost court is executed at once pending such approval.

Military tribunals have jurisdiction over all persons except those with diplomatic immunity and members of our own or allied armies. The officer who has power to appoint a court may refer cases to it, or if he considers charges deserving of more severe punishment than can be meted out by the court to which he can refer them, he will forward them to higher authority recommending reference to a higher tribunal.

The third and final phase of military government is after hostilities have ceased, and it normally will continue until the terms of peace have been agreed to and complied with. The operation of the military government will be under the commanding generals of the tactical units which comprise the forces of occupation, each of whom will have command of a military district and have a civil affairs section on his staff. G-1 of the War Department General Staff will make plans for the transition from military to civil government, and G-1 of the theater will prepare more detailed plans and supervise the transition. When the civil government, whether it be a new one or a return to former sovereignty, takes over completely, the army functions only as a garrison or is withdrawn, and military government is at an end.

In accomplishing the foregoing [mobilizing the Army], there must be no pampering of individuals, no distinctions between men because of their previous military experience or conditions of entry into the service. In a spirit of mutual respect and coöperation, the Army of the United States must now proceed with its high purpose of welding from the elements of the American democracy a disciplined, seasoned fighting force capable of defending the nation.

—General George C. Marshall, *Chief of Staff.*

The German Foot Infantry Division

By

Lieutenant Colonel Louis S. N. Phillipp, *Cavalry*,
Instructor, Command and General Staff School.

Since 1939, the attention of the world has been focussed upon what appear to be new doctrines in military tactics and strategy. New expressions have been added to our military vocabularies. We have learned to talk about "Blitzkriegs," "Panzers," "Stukas," "encirclements," and "total warfare" and have been exposed to the propaganda virus of "Nazi invincibility on the battlefield." In a campaign, which is an integral part of their psychological warfare, they have led us to believe that their successes on the battlefield are the result of new and startling doctrines of warfare. They have carefully refrained, however, from indicating the basic factor in these successes.

Modern battles may be initiated by the rapid thrusts of armored divisions aided by a powerful air force, but they are won by the ground troops which move in behind these steel-clad monsters and hold the ground which has been overrun. The Infantry is still "Queen of Battle," and the arms and services which facilitate infantry successes are her handmaidens.

The principles of warfare are not new. They are as old as warfare itself. It is merely the application of modern means to these principles which is new. This is the feature of modern warfare which the Nazis would have us overlook while our attention is diverted by the battle prowess of tank and dive bomber.

A survey of the general organization of combat units in the German Army, shows the relative proportion of strength to be distributed approximately as follows:

Normal Infantry Divisions	70.0%
Light Infantry Divisions	1.1%
Motorized Infantry Divisions	5.3%
Mountain Divisions	1.8%
Cavalry Divisions	.5%
Armored Divisions	6.2%
Trained Divisions (Estimated)	15.0%

This tabulation does not include the S.S. or Landwehr divisions or army or corps troops. It is significant, however, to note that infantry comprises more than 75% of the combat strength of the German army.

In order to understand the German military organization, we must start with principles adopted by the German General Staff for the reorganization of their modern armies. Briefly these are as follows:

The fundamental principle is *Flexibility*, which is applied in organization, equipment, supply, and the tactical employment of units in combat. The most flexible organization of a tactical unit which must rely upon fire and movement for success in battle is a triangular organization. The infantry divisions are therefore triangular in organization, while the Panzer divisions, which rely upon the success of the shock of their successive waves of tanks, are square in organization. Based upon this primary principle of flexibility are four supporting principles:

(1) The principle of the Standard Unit (Einheitsgruppe).
(2) The principle of tactical self-sufficiency.
(3) The principle of administrative self-sufficiency.
(4) The principle of the march-combat group.

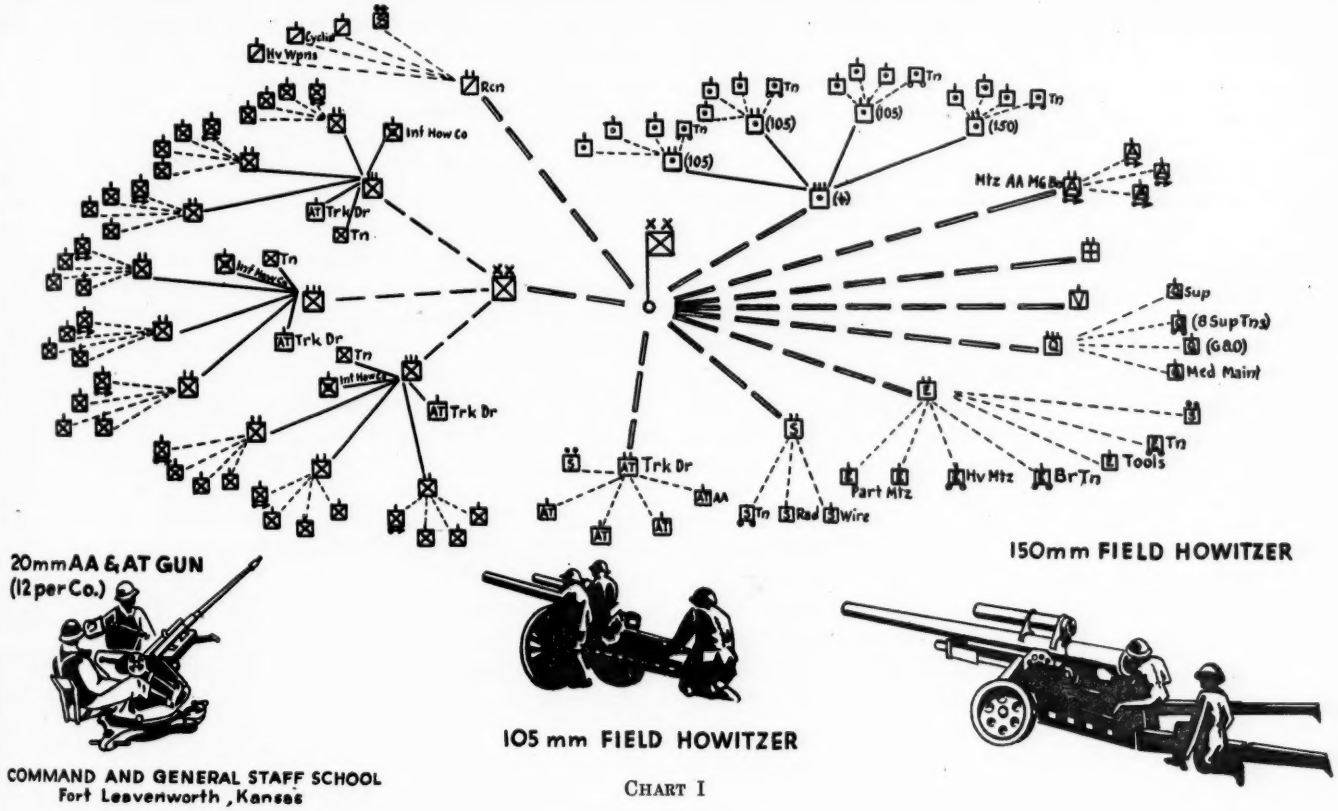
In preparing for the expansion of their army of some one hundred thousand men into a great Wehrmacht of millions, the Nazis hit upon the idea of standardization of the squad. Men who are to go to infantry, engineers, cavalry, motorcycle or bicycle units, or to armored infantry units of the Panzer divisions are organized into Einheitsgruppen or standard squads and receive the same equipment and training. Further technical training is given them when they are assigned to branches. The great value of this system lies in the standardization of basic training and in the fact that squads can be transferred from one branch to another with only a minimum of additional training necessary to fit them for combat.

Each fighting unit from the squad to the division has been provided with those weapons which it requires for success under conditions of normal combat. This makes the unit tactically self-sufficient. Each echelon from the platoon to the division has both high and flat trajectory weapons. Supporting weapons of proper mobility are provided. Since the Germans base their consideration of the mobility of infantry on the speed of the walking man, the supporting weapons are horse drawn or hauled in carts. All divisional artillery in the German infantry division is horse drawn. The only exception is found in the AT companies of infantry regiments or the divisional AT battalion, which are entirely motorized.

The German system of supply is simple and flexible. In the field, supplies are delivered from army to division to battalion. The army motor columns bring the supplies within reach of the division trains, which shuttle them forward within range of the battalion trains. The regimental train, called a "light infantry column," takes care of the ammunition supply of the regiment. Each battalion train is divided into combat, ration, and baggage sections. The divisional trains, which usually consist of eight light columns and two or more fuel (gas & oil) columns, are capable of hauling two hundred forty tons of supplies. With characteristic German efficiency, supplies are arranged in lots of thirty to sixty tons to facilitate handling and transport. One of the problems incident to reinforcing a division is the problem of providing additional supply trains. In the German division this is accomplished very simply. If infantry is needed, additional battalions are added to one or more of the infantry regiments without disturbing the regimental organization and it is only necessary to add one or more light columns to the divisional train to provide transport for supplies. This system also facilitates the attachment of artillery to the division.

German divisions habitually march in two or more

GERMAN INFANTRY DIVISION



COMMAND AND GENERAL STAFF SCHOOL
Fort Leavenworth, Kansas

CHART I

march-columns similar to our combat teams. Very often the division will enter combat in this formation and continue the engagement for some time before the units are brought under division control. The success of such an operation depends upon the careful training of commanders of all subordinate echelons. Every German officer and N.C.O. is trained to seize the initiative and to act energetically and aggressively under all circumstances.

In order to discuss the organization of the German infantry division and to tie this organization in with the tactical employment of its units, let us assume a situation. A German infantry division is advancing in three columns on parallel roads expecting immediate contact with an enemy force. For our purposes let us assume that the division has all the forces shown on the accompanying chart. (Chart I.) The divisional reconnaissance squadron is preceding the division at the distance of one day's march for motor and mounted units. (This squadron was formed from cavalry regiments which were disbanded on general mobilization.) The cavalry troop has some two hundred men armed with rifles and nine light machine guns. The bicycle troop has one hundred twenty-six cyclists and twenty motorcycles with side cars and is similarly armed. In support of these two troops is a heavy weapons troop which has a variety of supporting weapons. There is an armored car platoon with three four-ton vehicles, a machine gun platoon of four heavy machine guns, a medium mortar platoon of three 81-mm mortars, a cavalry howitzer platoon of two 75-mm field howitzers, and an antitank platoon of three 37-mm guns towed behind trucks or light tractors. The three scout cars, supported by motorcycles, will be operating well to the front, exploring the road net. Following them will be bicycle and cavalry patrols which can operate over paths, trails, and across country. In case of enemy resistance, the supporting weapons of the squadron are available to brush aside light enemy forces and enable the reconnaissance squadron to continue its mission. The antitank platoon is used against any enemy mechanized vehicles which may be encountered. This reconnaissance squadron can be expected to act aggressively under all circumstances. It operates well out in front of the combat teams since each of the latter have a mounted infantry platoon for close-in reconnaissance and protection. It can be readily seen that such a reconnaissance squadron can cover all types of terrain on the division front and that it has fire power and supporting weapons to overcome weak enemy resistance.

Let us assume that the reconnaissance squadron has met determined enemy resistance and has withdrawn to a flank. The German infantry will begin to appear. (Chart II.) Do not expect them to advance in open order "as skirmishers." It is more probable that they will "fan out" from the advance guard in squad columns with the light machine gun team leading the squad. Each squad will advance independently, taking every advantage of terrain features. As soon as the light machine gun team goes into action, some of the riflemen will start working forward to locate enemy flanks and strength. All German soldiers and officers are taught the value of immediate and thorough reconnaissance of the enemy position. As soon as a suitable

target has been located, the light mortar of the platoon will open fire, and under cover of the fire of this weapon and the light machine guns the riflemen will advance close to the enemy position. When they get within striking distance, they will hurl hand grenades to immobilize the enemy and then charge with the bayonet. They practice close lateral liaison, and often units of one company will maneuver to assist units of another company in overcoming an enemy strong point.

If the enemy force is too strongly situated to be dislodged by the advance guard, the company and battalion weapons are brought into action. There is much decentralized action on the part of German units. Each commander will act aggressively to gain his objective and to assist the advance of the neighboring units. A part or all of the automatic weapons may be concentrated in the holding attack while a maneuvering force operates to outflank the enemy position. The company may have been reinforced with heavy machine guns and 81-mm mortars from the battalion machine gun company or even with the 75-mm field howitzers from the 13th company of the regiment. These battalion machine gun companies are composed of three platoons of four heavy machine guns each and one platoon of six 81-mm mortars. The 13th company of the infantry regiment has three platoons of two 75-mm infantry howitzers each, and one platoon of two 150-mm infantry howitzers, for close support of the rifle companies. The infantry howitzers are employed by the regimental commander as the situation requires. One or more guns may be assigned to support a single rifle company, or one or more platoons placed in support of a battalion. They operate well forward to assist the advancing infantry.

Do not expect the Germans to establish a continuous line along the front. Their system is to occupy strong terrain features, with space between units. This spacing is deliberate, since their favorite maneuver is the envelopment. If the enemy seeks to withdraw because he is in danger of being outflanked, the Germans will "leap-frog" with a rear battalion and press vigorously on. Remember, their cardinal principle of leadership is "aggressive action."

Suppose the enemy has prepared an obstacle in front of his position which will require the services of engineers. In every rifle company of an infantry regiment, there are men trained as engineers (pioneers) who can be quickly assembled for such duty. If the situation requires tools or equipment which they do not have available, the division engineer battalion is called upon. Engineers are trained to work well forward, at times even in advance of the infantry. The battalion consists of two partly motorized companies, a heavy motorized company, a bridge train, a tools park, and the battalion supply train. Among other equipment carried by this battalion are a number of light boats and other stream crossing equipment. Qualified observers have commented upon the daring and efficiency of German engineer troops.

If the engagement has become general the combat teams are brought under division control, and the signal battalion establishes communications from the division command post to unit headquarters and with the next

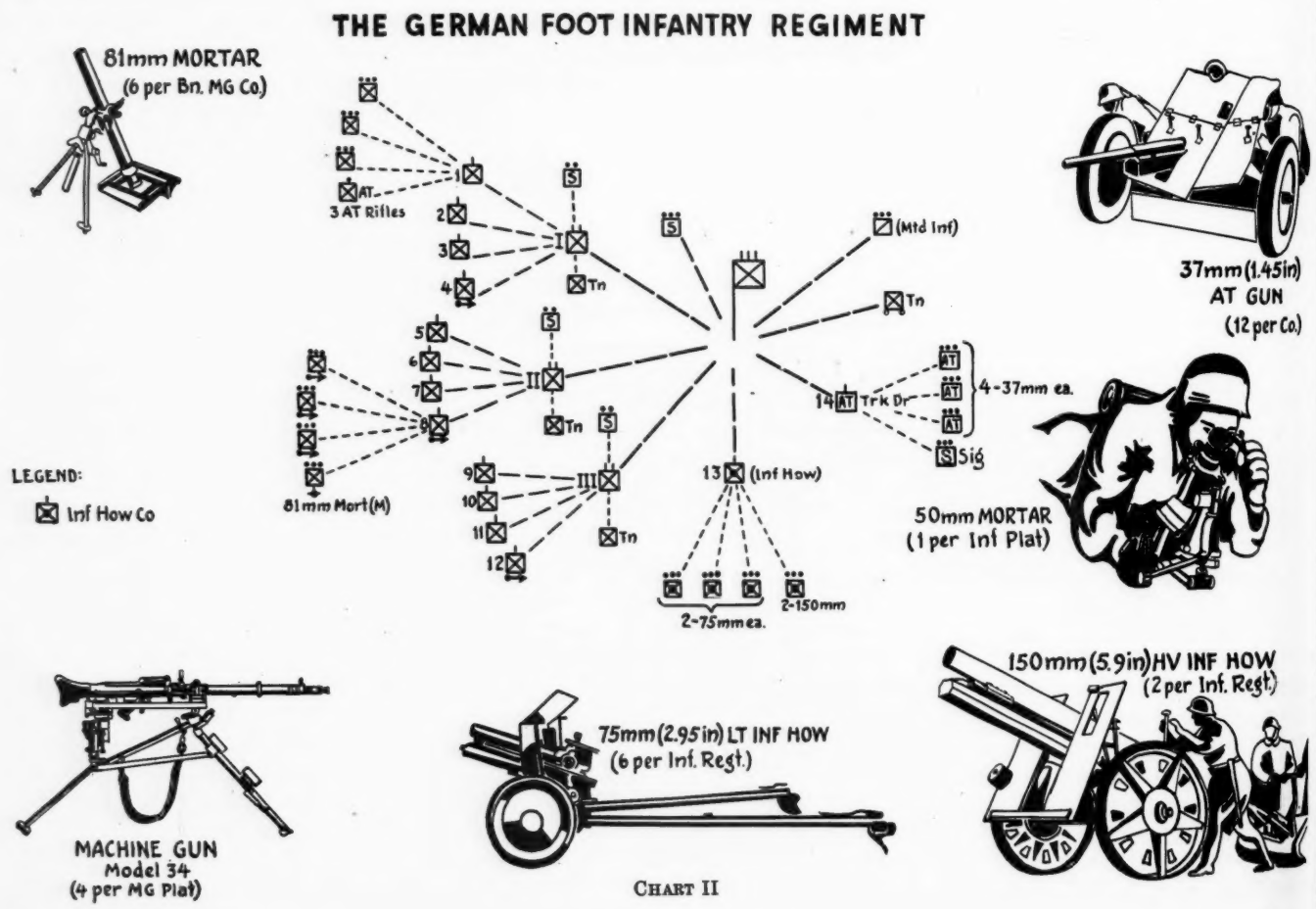


CHART II

major unit on the right. This principle of liaison with the next unit on the right is invariable and is practiced by all echelons. The signal battalion has a wire company and a radio company, and both systems of communication are established as soon as practicable.

The divisional artillery, which may have been engaged in support of one or more combat teams, is likewise brought under division control. Since each infantry regiment has its own accompanying artillery, the division artillery can concentrate on support missions and interdiction and counter-battery fires. The divisional artillery consists of a headquarters, a regiment of 105-mm gun howitzers, with three battalions of three firing batteries each, and a medium battalion of three batteries of 150-mm gun howitzers.[1] Thus the division has eighteen 75-mm infantry howitzers in the three Infantry regiments, thirty-six 105-mm gun howitzers in the light artillery regiment, six 150-mm howitzers in the infantry regiments, and twelve 150-mm gun howitzers in the medium battalion. The "four-gun" battery organization is used throughout the German artillery.

For protection against air attack, the division is reported to have antiaircraft artillery, caliber 20-mm. This is reported to be a combined AA & AT gun variously described also as a superheavy machine gun. The battalion[2] has three companies of twelve guns each. There is also a twelve-gun antiaircraft company in the antitank battalion.

For antitank protection, the Germans have three types of weapons, which may be found in various combinations in the AT battalion. These are a 37-mm gun developed by the Germans and which was the original armament of the companies of the battalion, the 47-mm Skoda gun obtained from the Czechs, and a new 50-mm gun which has recently been developed. The AT battalion has three companies of twelve guns each which are completely motorized, and the troops are highly trained in the protection of march-columns and in the defense of the division against mechanized threats.

The accompanying chart (Chart III) showing details of armament of the division has been compiled from various sources and should be corrected and augmented when later information is received.

It must be borne in mind that the German infantry division is a powerful, self-contained tactical force capable of operating either as combat teams or as an integrated whole. It is tactically and administratively self-sufficient and above all is very flexible when led by a capable and aggressive commander. Let us not over- or under-estimate either the German soldier or officer. They are skillful and aggressive fighters, schooled on the field of battle. But on the other hand, we must not fear them. American troops, trained and determined fighters, met the best divisions of Germany's World War armies, and defeated them. And the American soldier of this war, with adequate training and aggressive leadership *can* and *will* repeat the triumphs of other years.

[1]Some observers reported a battery of 105-mm guns in this battalion, but later reports state that this battery has been replaced by 150-mm gun howitzers.

[2]Recent reports state that the Germans plan to increase the AA battalion to a regiment in all infantry divisions this year.

Chart III — Types and Details of Weapons — German Infantry Division

Type of weapon	*Caliber in millimeters*	*Weight in pounds*	*How transported*	*Rounds carried or magazine capacity*	*Maximum rate of fire per minute*	*Effective range (yards)*	*Type of mount*	*Total in division*	*Remarks*
Rifle, Model 98 or 98 k	7.9	8.56	Carried	90	10 to 15	800		7,200 *	
Machine Pistol (sub-machine gun)	9.	8 to 9	Carried	6 clips of 32	250 to 300	100 to 200		438	Several models
Antitank Rifle, Model 41	13.	22	Carried	10	Single shots	800		81	Several models
Machine Gun 34, Bipod	7.9	26	Carried	3,000 Rpg in strips of 250	600 to 700	1,200	Bipod	430	
Machine Gun 34, Tripod	7.9	51	Machine-gun cart	5,250 Rpg in strips of 250	600 to 700	2,200	Tripod	116	Mount adaptable for anti-aircraft use also
Mortar, Light, Model 36	50.	31	Carried	45 Rpg	6 to 10	660	Bipod and base	84	
Mortar, Heavy	81.	187	Mortar cart	48 Rpg	10 to 15	400 to 1,100	Bipod and base	57 *	
Comb AA & AT Machine Gun	20.	1,012	Towed by light tractor	900 Rpg	280 *	1,500	Platform	84 *	10,000′ vertical range
Antitank Gun	37.	970	Motor-drawn	600 Rpg	15 to 25	1,100	Split trail*	75	Also new 50-mm gun
Howitzers, Infantry or Cavalry	75.	900	Horse-drawn	60 Rpg	10 to 15	3,900	Split trail*	20	
Howitzer, Infantry	150.	4,000	Horse-drawn	20 Rpg	5	6,000	Box trail	6	
Gun Howitzer, Field Artillery	105.	7,000	Horse-drawn	102 Rpg caissons	6 to 8	to 10,000	Split trail	36	
Gun Howitzer, Field Artillery	150.	15,000	Horse-drawn	60 Rpg caissons	3 to 5	to 10,000	Split trail	12	
Antitank Gun	47. *	1,980	Self-propelled *	74 Rpg		1,100	Tank chassis		Skoda model

* Not confirmed.

The Lamp of Experience

BY

MAJOR GEORGE F. ASHWORTH, *General Staff Corps.*

I have but one lamp by which my feet are guided, and that is the lamp of experience.—Patrick Henry.

The United States is again at war. The nation which made "big business" a by-word is in the biggest business of all—that of imposing its will on other nations by force of arms. To achieve this end, its vast production capacity is dedicated to the output of the tools of war. Millions of its men are being trained to use these tools. Thousands of these millions have been, are being and will be selected to direct their use in such a way that this army now building will achieve the purpose of all armies: destruction of the enemy forces. Only then may the national will be imposed on the foe.

A casual reader in the library at the Command and General Staff School or the Army War College can pull down almost any volume of past campaigns and turn at random to the story of a battle lost by a well accoutered, well trained army which was improperly led by someone who was repeating the mistakes of predecessors without number. The eternal principles of war are being eternally violated by leaders who refused to learn from the failures and successes of others. Sometimes changes in weapons and tactics blinded them to basic similarities. Again, the trees blocked a clear view of the woods. Knowledge of the past will not insure success. But it will rule out many roads from consideration which can lead only to failure. It will indicate some which have led to success when followed by well advised and experienced travelers.

Two great antagonists of more than a century ago both recommended the study of military history to soldiers. Some years ago, the then Chief of Staff of the United States Army, General Douglas MacArthur, joined Napoleon and Wellington in their advice, when he said in one of his annual reports: "More than most professions the military is forced to depend upon the intelligent interpretation of the past for signposts charting the future. Devoid of opportunity, in peace, for self-instruction through actual practice of his profession, the soldier makes maximum use of historical record. But the military student does not seek to learn from history the minutia of method and technic. In every age these are decisively influenced by the characteristics of weapons currently available and by the means at hand for maneuvering, supplying and controlling combat forms. But research does bring to light those fundamental principles, and their combinations and applications, which in the past, have been productive of success. These principles know no limitation of time." Let not this country, then, in building a vast war machine, feel that its battles are won. The machine must be properly operated to achieve success. Operators of today may learn much of what to do and what not to do by a consideration of the results achieved by operators of yesetrday.

In September 1862, a well equipped and trained United States army faced a numerically inferior and ill-equipped foe across a creek in Maryland. The terrain was in many ways similiar to that on which a great battle was won by a great general in Europe a little more than half a century earlier. The commander of the United States army must have been familiar with this battle. Perhaps he failed to see the similarities. Or, harried and beset by myriad pre-battle worries and lost in "the fog of war," he may have forgotten.

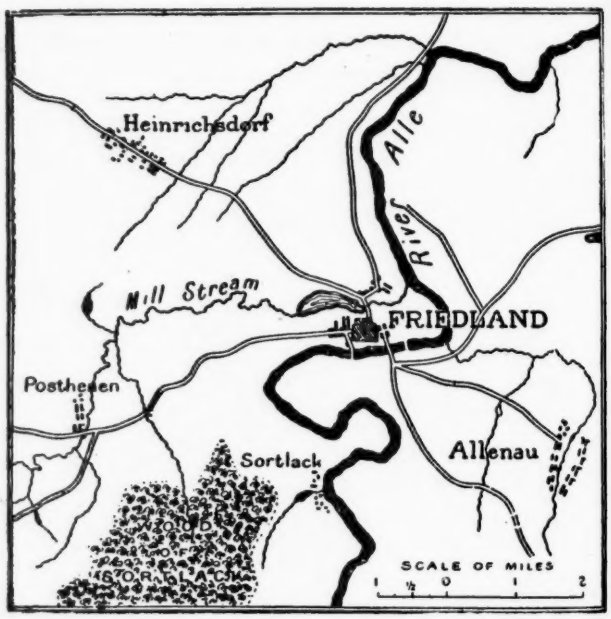


FIGURE A.

For whatever reason, McClellan at Sharpsburg failed to profit by the example Napoleon set at Friedland. As a result, his magnificant army lost another battle and the war was not won for nearly three more years, although, on that September day of 1862 the Army of Northern Virginia might well have ceased to exist had Napoleon instead of McClellan commanded the Army of the Potomac.

The theaters of these two battles are so similiar, the chief actors and the results so dissimilar, that they illustrate admirably the points previously made, that the past may provide a chart for the guidance of the present and that superior tools may be dulled in the hands of a heedless or inept craftsman.

Excellent critical accounts of both Friedland and Sharpsburg already exist and no attempt will be made to add to them here. But enough of their stories must be told to make clear their likenesses and differences and to show where "the little Napoleon" failed by not learning

from the great Napoleon. First, consider the fields of action. They are much alike in their military implications.

The town of Friedland lies in a bend of the Alle river, and, in 1807 was approached by two main roads from the west. From the east access was a masonry bridge at whose eastern end several roads met. A meandering mill stream with marshy banks divided the plain west of Friedland in two and, passing through the town, emptied into the river. North of this stream, on somewhat higher ground several miles from Friedland, was the village of Heinrichsdorf. At the third point of this triangle, of which Friedland and Heinrichsdorf formed the other two, was the hamlet of Posthenen and between here and the river, the woods and hamlet of Sortlack, the former extending some distance southward and the latter being on the river bank.

A visitor who climbs the observation tower at Sharpsburg and looks west will have much the same view of the field as had Major General George B. McClellan, U.S.A., when first he saw it. The visitor will have a better viewing platform than the General possessed but, if he happens to make his visit in September, will see the same ripe, rolling countryside, dotted with rock outcroppings and marked by the valley of Antietam Creek, from which the battle takes its other name. It is a countryside quite like that over which Major General "A" of the Leavenworth map problems is everlastingly maneuvering his invariably victorious Blue forces. Blue, however, did not fare so well at Sharpsburg. Not only was McClellan opposed by the Confederate gray instead of the blundering Red of the problems, but he forgot a great many of the principles of war of which Major General "A" is an outstanding exponent.

Our visitor in the tower will see how the east bank of Antietam Creek rises to rather steep hills and how the west bank slopes sharply up also. He will notice that a ridge formation screens Sharpsburg from the east and he will not be able to see the Potomac River behind the town. The battlefield is crossed by a number of farm roads, one of which became famous as "bloody lane," and by the Boonsboro and Hagerstown turnpikes which meet at Sharpsburg. The Upper, Middle and Burnside bridges crossed Antietam Creek within the battle area and the stream was fordable almost anywhere despite the rather high banks along most of its length. Stone walls divided the fields at many places, affording some cover, but the Union artillery positions on the east side of Antietam Creek had reasonably clear fields of fire over most of the Confederate position. Patches of woods were scattered here and there. Those surrounding the famous cornfield on the left of the Confederate position, known as the East, North and West Woods, figured prominently in the battle. The Hagerstown turnpike provided an excellent line of communications along the Confederate position. Figure "B" shows details.

Sharpsburg, like Friedland, lies in a river bend but is back from the river bank a little more than a mile. The same opportunity exists, however, for a victorious army to pin an enemy, defending before the town, against the town and river bend and destroy him. This will be seen more clearly if the field of Sharpsburg, as shown in Figure "B," is compared to that of Friedland, represented by Figure "A."

How Napoleon accomplished his purpose and how McClellan failed to is briefly told if the background of each battle is omitted as not pertinent to the discussion.

The curtain rises at Friedland on a scene of great and somewhat confused activity. The Russian army was withdrawing before the Napoleonic host and part of it was already across the Alle when its commander, General Bennigsen thought he saw a golden opportunity to engage and destroy the vanguard of the enemy.

Napoleon, following his usual practice of keeping the point of his sword in the small of his enemy's back, had ordered the elements of his army to pursue with all possible speed, without much regard to keeping his units within supporting distance of each other.

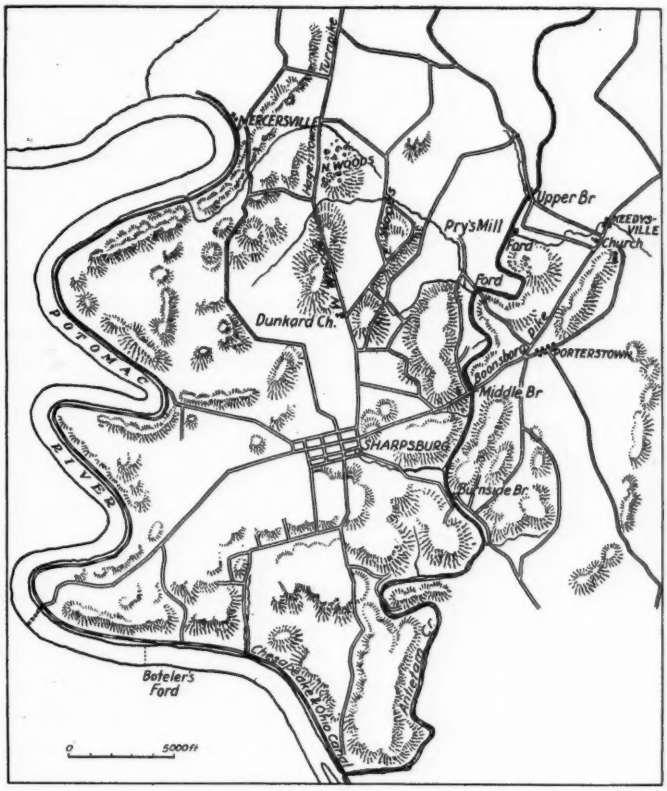


FIGURE B.

Marshal Lannes' corps arrived on the higher ground west of Friedland at three o'clock on the morning of June 14 and found Bennigsen in the act of getting his army across the river. Bennigsen decided to attack Lannes before other elements of the French army arrived and began to reverse his river crossing, bringing back to the west bank most of the troops he had just gotten across. He had constructed three ponton bridges to supplement the masonry bridge at Friedland.

Lannes rapidly deployed his corps astride the road at Posthenen facing the Russian rear guard and immediately sent word to Napoleon. Bennigsen made no reconnaissance of consequence and Napoleon's information of the situation was therefore better from the first than Bennigsen's. He ordered all the troops strung out behind Lannes to proceed to Friedland as rapidly as possible.

Meanwhile the Russians made an effort to secure Heinrichsdorf, but Lannes had already occupied the village and his troops stood off the Russians. Skirmishing continued during the morning, while Bennigsen slowly brought his army together on the west bank of the river and extended his lines from the wood of Sortlack north beyond the front of Heinrichsdorf. His losses during this time

were somewhat heavier than Lannes' because of the greater concentration of his troops.

About noon the Emperor reached the field and studied it in a leisurely manner before forming his army, which was rapidly pouring out on the plain. He found that Bennigsen could dispose about 60,000 men against his 80,000. This gave him no great preponderance but he seemed little concerned, as he gave the necessary orders for locating his units.

The Russian left was composed of four divisions under Bagration and the right of three divisions under Gorchakov, supported by about two-thirds of the cavalry.

Napoleon quickly formed the plan of attacking steadily on the Russian left, meanwhile allowing the right to gain ground, until he could cut it off from the bridges over the Alle and destroy it. If the left had been roughly handled in the meantime, little would be left of the Russian army as a fighting force. At three o'clock he issued his orders and at five o'clock the attack on the Russian left moved forward.

Marshal Ney led his famous corps, 30 guns supporting him and the Russian artillery pounding him as he advanced. The Russian cavalry charged against his flank but was in turn struck by the French cavalry. Ney's force fought on against increasingly heavy fire from the Russian batteries until a counter-attack by the Russian Imperial Guard stopped them. Soon the French lines began to waver and fall back. At this juncture, Dupont's division of Victor's corps came up and threw its weight into the French effort, pushing the Russians back and pouring the fire of 36 additional guns into their crowded formations and the town behind them. Friedland was now burning. Russian reinforcements failed to turn, again, the tide of battle. The entire French assault swept forward, Dupont forcing his way into burning Friedland along the Koenigsberg road.

Bennigsen now sought to save something by ordering his battered left wing to fire Friedland where it was not already burning and retire across the bridges. When most of those, who could, had crossed, the bridges were fired.

During the fight on the Russian left, Lannes and Mortier had been sparring with Gorchakov on the right, preventing him from reinforcing the left and fending off his attacks.

When Gorchakov saw Friedland burning and the Russian troops of the left pouring back over the river in disorderly retreat, he fell back, only to be met by Ney and Victor, while Lannes and Mortier continued to press him from the rear. His command was cut to pieces.

Friedland was done. The Russian battle losses were more than 20,000. The army was completely disorganized and disheartened. Most of its equipment was gone. Bennigsen took up the retreat toward Wehlau.

Napoleon's quickly conceived and brilliantly executed battle plan had won him a great battle and the peace of Tilsit.

Had Bennigsen attacked Lannes with more despatch, swinging his right to seize Heinrichsdorf, he might have defeated Lannes and retreated safely to Wehlau along the left bank of the Alle, before Napoleon came up with the rest of his army.

Instead, he fought a great commander from the disadvantageous position of having his forces backed up against the bend of a large river. He was ruined and his fine army virtually destroyed. Napoleon's movements were characterized, as usual, by great speed of planning and execution, originality and simplicity of design, careful apportioning of available forces, relentless attack and ruthless exploitation of victory.

Sharpsburg was another story. Here the Confederate army was caught in a river bend position by a Union army more than twice its size.

McClellan might well have sat on a rock overlooking Antietam Creek, read a good brief account of Friedland and, making allowances for certain differences in terrain, weapons and what not, acted accordingly. He would probably have won his battle, though Lee, rather than Bennigsen faced him across the stream valley. He lost it. Let us see how and why.

On the afternoon of the sixteenth of September, Hooker's corps of the Union army crossed Antietam Creek at the Upper bridge and a nearby ford to make contact with the Confederate left. Hood's division advanced into the East Woods to meet Hooker but after some fighting, was forced back and Hooker deployed to renew the attack in the morning.

His attack, early on the 17th, was met by Jackson's line, stretched across the cornfield between the Hagerstown pike and the East Woods, but made some progress, which brought his men under enfilade fire from Early's command and Stuart's artillery, who composed the Confederate left in the West Woods. Hood came to Jackson's support and Hooker was driven back across the cornfield. Mansfield's Union corps had taken a wrong direction while advancing to support Hooker and attacked after Hooker had been forced back. Despite the fact that Mansfield was killed when the assault started, the corps struck the Confederates and, after a sanguinary fight, forced them again out of the cornfield. The Corps, now under Williams, was too weakened to continue. At nine o'clock, Sumner led Sedgwick's division, in column with brigade front, against the Confederate position in the West Woods. He made no reconnaissance and took no precautions regarding flank security but penetrated the woods only to be met by converging fires which cost him 2,200 men in a few minutes. A Confederate counterattack forced him out of the woods and again the battle swept across the ghastly cornfield to the front of the North Woods. Here the attack lost momentum and Sumner's troops halted.

French's and Richardson's divisions of Sumner's corps were intended to form part of his attack but had veered too far to the left. They came up against the Confederates deployed before a sunken farm road, forcing them back into it, where they took up position and poured a devastating fire into the ranks of the attackers. The Union left was extended until enfilade fire accomplished what frontal assaults had failed to do, despite heavy casualties on both sides. It became necessary to swing back the Confederate right to meet the threat on this flank. Then came one of those fatal blunders so likely to occur in the heat of battle. The commander of the Alabama regiment holding that part of the position gave the order: "Sixth Alabama, about face; forward march." When adjacent units saw the execution of this order, they fell back under murderous fire and the Union soldiers poured into "bloody lane"—all but about

2,900 of them. Confederate losses were greater but the exhausted remnants fell back to new positions and reformed.

Meanwhile, Burnside had been attempting to cross the Antietam at the bridge which now bears his name. A small Confederate force held the west end of the bridge successfully until Burnside's third assault, yet no attempt at fording was made, though later Rodman's division forded lower down.

Lee had used all his reserves by the time the Confederates were driven from "bloody lane" and had drawn heavily from his right to reinforce his left. He could not now reinforce his right to meet the advance of Burnside's men. At three o'clock, Cox, in command of the Union forces on the west bank of the Antietam, attacked 2,000 Confederates on the south flank. This force had already fallen back from near Burnside bridge to the heights before Sharpsburg and Cox drove them into the town's outskirts.

At this critical moment, came the second "break" in the battle but this time the goddess of chance smiled on the Confederates.

Before the battle, Lee had detached a force to take Harper's Ferry. A copy of his orders had been found and turned over to McClellan, who had thus been able to upset Lee's time table. However, just as Cox was driving Lee's right into Sharpsburg, Confederates from Harper's Ferry, under A. P. Hill, arrived on the field and struck him on the flank, disorganizing his command and driving it from the heights. Cox then took up position on the west bank of the Antietam near Burnside bridge. All assaults on the Confederate position had failed and the battle was over.

McClellan launched five separate attacks against the Confederate position. Hooker's on the 16th, Hooker's on the 17th, Mansfield's (led by Williams after Mansfield's death) Sumner's (including the attack of Sedgwick's division, led by Sumner, and the attack by French's and Richardson's divisions of Sumner's corps, all at about the same time) and Burnside's. No reconnaissance preceded any of them. These tactics enabled Lee to reinforce one part of his line from another to meet the piecemeal attacks. He used 6,000 men from his right to reinforce his left. After the successful Union attack on "bloody lane," Lee had used up his reserves. McClellan had Franklin's and Porter's corps yet uncommitted and was holding Pleasanton's cavalry idle in the center of his reserve, when it should have been covering the south flank, where it could have warned McClellan of A. P. Hill's approach. McClellan should have launched a strong attack on this flank to cut off Lee's retreat.

September 17th was the bloodiest day of the war. Lee lost more than 11,000 of the about 40,000 men in his army, McClellan 15,000 of the more than 80,000 at his disposal.

On the 18th Lee began his leisurely withdrawal to Virginia, having successfully defended his position against a force twice his strength, which made no move to follow him.

McClellan has stated that his plan of battle "was to make the main attack upon the enemy's left—at least create a diversion in favor of the main attack, with the hope of something more, by assailing the enemy's right—and, as soon as one or both of the flank movements were fully successful, to attack their center with any reserve I might then have in hand."

We have already seen how these attacks were carried out and what McClellan did with the reserve he had "in hand." His plan lacked much of the definiteness, concentration of force and preparation for exploitation that characterized Napoleon's. But, then, McClellan was making the common mistake of refusing to learn from past masters and his greatest sin, besides, was in execution, not in planing.

Among other principles of war violated by McClellan were the principles of Mass (of which Napoleon was the master exponent) and Economy of Force.

But it must not be forgotten that McClellan was a thoroughly trained and competent soldier, judged by Lee (generally recognized as the best commander the war produced on either side) to be the ablest general who opposed him.

McClellan had been provided with superior means but he forgot how to use them. There is a lesson in the story of Sharpsburg for all commanders of American armies, today and tomorrow.

What strength of will and greatness of soul it takes to launch one of those decisive battles on which the fate of a throne, a dynasty, or a nation depends!—the necessary decision is too often lacking.

—Napoleon as quoted by Lieutenant Colonel W. F. Kernan in *Defense Will Not Win the War.*

Japanese Fighting Spirit

Popular reports of extraordinary courage and undaunted self sacrifice, peculiarly Nipponese, have raised the question of how thoroughly and effectively Japanese troops are imbued with unusual fighting spirit. Likewise, we often read of heroic suicides committed by certain individuals inspired to fanaticism in devotion to certain patriotic ideals. Since such reports are usually magnified by emphasis because of the unusual nature of what is related, it is necessary to be cautious that we neither exaggerate nor belittle the influence which Japanese patriotic lore and religious heritage exert on their enthusiasm in battle.

The inculcation of Nipponese ideals, based on their religious, philosophic, and patriotic teachings, has been taking place in Japan for centuries and is inevitably tied up with evolving social conditions. For about 200 years before 1854, practically all intercourse with the outside world was prohibited. During this period the government of Japan was military in character. There was an emperor who did not rule for himself but was under the power of an individual called *Shogun,* who actually governed the country and whose office was hereditary. The first of that line of Shoguns had reached his high position by armed force; succeeding Shoguns used force to maintain their positions. The country was divided into large domains, each of which had its lord. Each lord possessed a private little army of warriors known as *Samurai,* who were not allowed to engage in business or to marry outside their class. More important, the Samurai had to do the bidding of their lord under all circumstances even if it meant the sacrifice of life; the Samurai warrior dared to cause his lord no embarrassment whatever. If he did, he was expected to commit *Seppuku,* or *Hara-Kiri,* a ceremonial suicide. The whole set of rules for Samurai conduct was known as the Samurai Code, or Bushido—The Way of the Warrior.

The Samurai Code is the guide and inspiration of the officers, both teachers and students, in the Japanese Military Academy. A Japanese spokesman briefly expressed the essentials of the spiritual teaching given officers and officer candidates thus: "The Japanese officer prepares to die heroically. For this purpose, he must acquire contempt for life, the dominion of his mind over material things and skill to fight well." As specific instruction the spokesman also cited: "Remember that the protection of the state and the maintenance of its power depend upon the strength of its arms . . . Bear in mind that duty is weightier than a mountain, while death is lighter than a feather."

Students of the Japanese Military Academy go daily to a Shinto temple on the Academy grounds to renew their oath of loyalty to His Majesty, to the Nation, and to pray that the divinity will grant them strength and courage to fulfill their military duties and to die gloriously. In the name of the Emperor, the Japanese pray for national progress of Japan's institutions, for the prosperity of their families and friends, but never for themselves nor for liberation from their own troubles and suffering. They are taught to disregard themselves.

Although the spiritual education is basically the same for all Japanese officers, other education, supplemented by specific philosophical heritages, divides the officers into three classes. The elite corps includes the regular officers who are well educated and in line for the highest posts. This class is the least numerous. Another class includes those who have come up from the ranks and need not expect promotion to highest positions. Still another class includes reserve officers selected from Class I conscripts and given appropriate training. With few exceptions, Japanese army officers are not broadly educated men but are intensely educated in Japanese spiritual lore and in one or more branches of the military service. As a rule their intellectual equipment limits them to the category of narrow education. On the other hand, Japanese naval officers are generally very well educated because they must be qualified to understand modern naval engineering and tactics which often are acquired through association with well educated people of other nations.

This difference in the education of the army and navy leaders not only explains some of the serious disagreements that have arisen between the Japanese army and their navy, but also provides us with a basis for predicting the kind of military effort we may expect from the two groups. We may expect the Japanese Army to pursue with fanatical vigor the accomplishment of any task assigned, ruthlessly sacrificing lives; and since there is little room in their instructions for defensive warfare, we may expect Japanese land forces to execute defensive tactics less skillfully than a well trained Occidental or Western army. It is conceivable that a Japanese army once put on the defensive may be a defeated army. The Japanese navy on the other hand can be expected to use discretion in all efforts and to follow up efficiently any advantages gained. The naval leaders may have fighting ardor, but they also may be expected to possess modifying judgment.

In connection with fighting spirit, a few comparisons between Japanese officers and officers of Western armies may be made. As a rule, Japanese officers, especially of the army, are less well trained technically than the Western officers, but this deficiency is made up in part by the unusual fighting ardor of the Japanese. However, this extreme ardor might prove a weakness in European warfare; whereas, it has often been satisfactory in the warfare of the Far East. The Japanese officer is ordinarily a magnificant leader of men; his weakness consists in his failing to remain master of combat; he goes through with a battle instead of directing it. He often disregards losses; his courage and conception of honor are more inspired by a warring passion than by a realistic understanding of the craft of arms. This weakness is not so frequent among Western officers.

With their emphasis on bravery, courage and atonement for their mistakes and misfortunes, the Japanese officers, as well as some non-military Japanese, at times voluntarily commit *Seppuku* or *Hara-Kiri,* a form of heroic suicide perpetrated as a part of a formal ceremony in the case of high ranking individuals. (In the case of others the

attendant ceremony may be lacking or greatly reduced.) The principal makes dignified preparations for the ceremony, the procedure for which varies slightly according to the nature of the offense, the rank of the individual, and other circumstances. A typical procedure is as follows: A dias three or four inches from the ground is constructed in the principal's baronial hall, in a temple, or when conditions require it, in some other place. Upon this dias a rug of red felt is laid. The principal, clothed in his ceremonial dress and accompanied by a friend, takes his place on the rug around which his friends and various officials arrange themselves in a semi-circle. A dagger is then handed to him with many obeisances, and he makes a public confession of his mistakes or misfortune. A moment later he plunges the dagger into his stomach below the waist on the left side and draws it slowly across to the right and, turning it, gives a slight cut upward, and then falls forward on his face. At this moment, his friend, crouched at his side, leaps up and beheads him with a large sword. This method of death is praised and glorified by the military caste as the most honorable for atonement through failure or disgrace.

Depicting the Japanese heritage of religious philosophy growing out of ancient Nipponese customs and superstitions and later foreign influence, a Japanese professor in connection with the sentiment which inspired men to self sacrifice, related an illustration of *Hara-Kiri* as follows:

"After the retrocession (Sino-Japanese War), more than one hundred soldiers who had fought in Manchuria took it as the blackest stain on our national honour, as an unparalleled humilation of a nation, which had never before been humiliated by a foreign power. They wished to put this on record, and so they wrote their protest with their own blood by committing *Hara-Kiri*, by the ancient right of the Samurai, which says to the world that they would rather die than see dishonour. In their dreams, in the eyes of their imagination, the fighting men of today see the ghosts of these men wandering over Port Arthur in company with those of many hundreds of other men who had fallen before Port Arthur in storming it and taking it from the Chinese. These spirits of the dead, in the existence of which we of the Far East believe quite as much as the Christians of the West believe in the immortality of the soul, cannot find rest and peace as long as that stronghold is in possession of a power which humiliated us some ten years ago, in the days of national exhaustion, at the end of the Sino-Japanese War."

It was primarily to the spirits of the dead that Admiral Togo formally announced the news of the destruction of the Russian fleet (1905, Russo-Japanese War). He said, "Standing before your spirits, I can hardly express my feeling. Your passing from the world has been in the gallant discharge of your duty. Our combined fleet retains the undisputed control of the seas. I trust that this will bring peace and rest to your spirits. I have been called by the Emperor to report our successes to the spirits of those who sacrificed their earthly existence for the attainment of so great a result."

With the incentive of appeasing these uneasy, unpropitiated spirits around him, the Japanese soldier who most conscientiously lives in conformity with Nipponese philosophy, religion (including ancestor worship), and patriotism, is not afraid to sacrifice his life on the field of battle. With him, moral courage is higher than the mere physical. To die having accomplished something for Japan is indeed glory. No service is too hazardous, no work too menial or too degrading. The Japanese soldier can endure everything for his ancestors and his country. Ancestor worship and patriotism are components of a religion which makes common people—men, women, and children—heroes and which provides the formula, "To do nothing that is shameful. To live so as to become a good ancestor and to do nothing to degrade in any way the good name of one's ancestors."

These religious teachings find fertile ground in the highly emotional characteristics of the Japanese, particularly in those—and this includes most of them—who are denied a good, broadening education that would tend to dispel ignorance and superstition. The emotional characteristics of the Japanese are indicated by their custom of weeping in the motion picture shows and by their expressions of joy, happiness, anguish, sorrow, and grief in connection with their unusual sentimentalities cultivated in their peculiar lore which so thoroughly saturates them. Impelled by their emotional natures and under the influence of indoctrination, Japanese soldiers have been known to sacrifice themselves needlessly. A striking example of mass suicide related by General Douglas MacArthur has been described by the biographer, Bob Considine, (Kansas City Journel, 2 March, 1942), as follows:

"He (General MacArthur) was present at the appalling mass suicide in the Yalu River battle (Russo-Japanese War). The Russians were retreating for the river and were fighting rear guard action against a Japanese army. When the fighting slackened, Japanese commanders ordered a brigade to advance and feel out the Russians. It advanced boldly, but discovered upon reaching the river bank that the Russians had already retired across the water.

"Japanese commanders then sent word to the advance brigade to return and join the main body of troops and prepare for the main advance. The Japanese infantrymen were thunderstruck. They believed they had somehow disgraced themselves, because they were being called back. More than 1,000 of them committed suicide on the spot rather than obey the order to fall back. Others followed the example that night and the next day until the emperor actually was forced to issue a proclamation forbidding suicide."

The enthusiasm for conformity with their religious teachings often imbues Japanese military officers so deeply that they strictly apply these teachings in the performance of their duties. Officers who accept the responsibilities imposed by ancestor-worship and patriotism take their profession deeply to heart. When they feel they have failed to attain some objective or to complete properly some task, they commit *Hara-Kiri*, not for fear of punishment, as a rule, but, to our minds, as a mistaken sense of duty. A few examples will indicate how Japanese officers have applied *Hara-Kiri* for their atonement.

A party of the Japanese 5th Infantry from Aomori (in northern Japan) set off to carry out maneuvers on Hakodo-yama, a snow-clad mountain some miles from the city. On the way the party of about four hundred was caught in a very severe snowstorm and lost its way on the hills. Nearly

three hundred officers and men died from exposure, and the commander, Major Yamaguchi, who was one of the few survivors, felt the responsibility so deeply that he committed *Hara-Kiri.*

Another illustration was that of an infantry officer who fell out of a route-march. It was a case of sheer fatigue and nothing else, but after he had recovered, he went to his commanding officer, apologized and asked this officer to punish him. The commanding officer, however, knowing the facts of the case, refused to do so and merely told him to get himself into better training for long-distance marching. Not content with this, the officer again asked to be punished; and as his commanding officer still refused his request, he wrote a letter saying that he considered it a disgrace to his regiment to have an officer who had fallen out on the line of march and that he had therefore decided to retrieve the good name of the regiment by relieving it of himself. He then committed *Hara-Kiri.*

A somewhat similar case occurred during the 1920 Grand Maneuvers when an artillery officer committed suicide by way of wiping out a disgrace which consisted of nothing more serious than a failure to get certain important orders through to the attacking troops—a matter to be regarded as serious in actual warfare but hardly an irreparable disgrace in ordinary peacetime training. The tragedy of the whole affair was increased by the fact that it was subsequently learned that the failure to pass the orders on was due to failure of the telephone connecting him with headquarters. The wire had been cut by some small children who had noticed it lying by the side of a road on which they were playing.

The highest honor is accorded those who commit *Hara-Kiri.* A certain Major General Yoshibashi committed *Hara-Kiri* because he disagreed with some other members of the General Staff on the question of the best use of cavalry. He maintained that cavalry should be used for shock action, whereas dismounted action was only of secondary importance for that arm of the service. The majority of the members of the General Staff disagreed with Yoshibashi. Although some Japanese officers held the same views as Yoshibashi and others sided with those of the General Staff, all of the officers expressed their admiration for the action taken by the General and regarded it as right and proper under the circumstances. Some said as long as Japan had men like General Yoshibashi, she need never fear defeat.

Another instance of the respect shown by the Japanese for those who commit *Hara-Kiri* is illustrated in the following narration: An old woman pointed with pride to a painting on the wall of her home. It was the portrait of the Great Saigo, the famous Japanese soldier who led the Satsuma rebellion in 1877. With pride she said:

"I also am of Samurai birth. My father fought by the side of the Great Saigo, and on seeing his chieftain killed, he committed *Hara-Kiri* over his dead body."

The old woman proudly related how her father ended his own life in order to be with his lord in the next world rather than surrender to his enemies.

The spirit actuating officers and men to the willing sacrifice of their lives on the field of battle is well illustrated by Captain Asano, who was killed in the raid (during the Russo-Japanese War) anticipated in his letter which follows:

"Today, at 10 o'clock, I am to set out at the head of 75 men especially selected from the Cavalry Brigade. We are to emerge on the enemy's rear, reconnoiter his condition, interrupt his communications, and disturb his general plan. Probably you will not hear from me again for fifty or sixty days. We are determined to push far into the Russian lines, and we trust the issue to the guidance of Shaka (presumably a God), believing that now indeed we have an opportunity of repaying, though in an infinitesimally small degree, the favors our country has received from our Sovereigns during thousands of years. That is the sole thought of your worthless son at this moment, and he goes to his duty with absorbing delight. But we have a long march before us, and many dangers to encounter. For my own part, though I am myself of little account, the men under my command are such fine fellows that there is hope of success. I beg you to be at ease, for I swear that I shall not disgrace my father's name or sully the honour of our family. At this moment of setting out, I have written down a verse by way of farewell to life—

" 'If life be but a dream,
Why dreaming, live?
Oh, gladder far to fall
Ere yet the flower fades.' "

The foregoing examples indicate how loyal to their religious, philosophic, and patriotic ideals the Japanese officers and soldiers sometimes are.

However, Japanese lore, superstitions, philosophies, and religions were destined to modification and change; such alterations have been slowly taking place for about a century and they are not yet ended.

When Japan opened relations with the countries of the world following the introduction secured by Commodore Perry in 1854, many leading Japanese individuals saw that western methods must be adopted or copied if Japan was to survive. First the *Shogun* was overthrown, and the Emperor in person became the head of the State. Japan's army was modeled after the Prussian; her navy followed the British pattern. Conscription was adopted, and, most important, the Japanese leaders saw to it that the the common man was conscripted, not just the Samurai. Of course the Samurai (the warrior class) did not approve of this action; however, after a time they accepted the new order. They entered the army and navy in large numbers and generally as officers until they completely dominated both. In addition, they brought with them the principles of the old Samurai Code, remodeled now around a fanatical loyalty to the Emperor, who is considered a direct descendant of the Sun Goddess and therefore divine.

The divinity of the Emperor is an essential aspect of the Japanese national religion, *Shinto,* which is a combination of nature worship and ancestor worship. Nature worship adds a mystical element to the Japanese attachment to locality, and inculcates loyalty and patriotism, the most important features of the *Shinto* religion. Ancestor worship serves to unify common purposes and interests of the groups and to glorify memories of the dead. All foreign creeds, including the most prevalent religion in Japan, Buddhism, and also Christianity and Confucianism when transplanted to the soil of Nippon, become gradually imbued with the spirit which animates Shintoism.

There are, however evidences that many of the distinguishing features of Japanese civilization cannot survive contact with the world. The Sun Goddess, the Shinto mythology, the Emperor's divine descent, the uniqueness of Japan, the Imperial Way, the fables that are taught as national history—these are the things that make the Japanese pulse beat faster, and all of them suffer change and decay when the skeptical air of the modern world touches them.

Introduced through contact with the modern world, the modifying foreign influence affecting Japanese religions, philosophy, and general attitudes toward Nipponese problems are reflected in popular reactions throughout Japan. As late as March 1940, Japanese men often sought to evade military service preferring to remain with their families. There are instances reported in which groups of men were intoxicated by free distribution of liquor and then induced to join the military service while they were under the influence of liquor. In other cases reported, Japanese soldiers fell into habits of drunkenness, and when cautioned by their officers, complained that they could hardly be expected, without resorting to drinking as relief from worry, to endure departure from their families who had little or no support. The Japanese population, in general, has not willingly supported the war waged by Japan in the Far East, but has been forced to accept what the Japanese government, dominated by military leaders, has decided. This situation means that Japanese fighting spirit is not always spontaneous.

Furthermore, there are, in these modern times, only a very small percentage of the Japanese military forces so conscientiously loyal to their Shinto religion and so imbued with the spirit of their ancient superstitions and philosophy that they voluntarily sacrifice themselves in battle in vain or commit *Hara-Kiri*. The Japanese people, like all other people, possess various degrees of devotion to their religion, ranging from the extreme cases, including the few most devoted and conscientious, to those who are quite indifferent. Between the two extremes are the great majority that are only luke-warm to various degrees in its devotion to the principle of self sacrifice in battle. A reasonable conclusion is that we may expect the influence of Japanese religion to inspire to some extent the fighting spirit among the Nipponese troops, but only in the case of those few most assiduously and meticulously living in conformity with their religious ideals need we expect that the fighting spirit cannot be broken except by death.

Since the attack at Pearl Harbor, there have been reports of Japanese troops running in retreat on the field of battle. On Bataan Peninsula, Japanese soldiers have been taken prisoners. These incidents show that the Japanese soldiers do not always sacrifice their lives in battle merely to join the spirits of the dead.

They have, however, been required to sacrifice themselves in the battle for Bataan. Their officers ordered overwhelming numbers of them to assault under such circumstances of great risk that their losses were frightful. This conduct of battle is consistent with the Japanese fanatical patriotism.

Tanks in Forest Combat

By

Lieutenant-Colonel P. Vegerchuk, *Russian Army.*

Experience has proved that it is possible to use tanks in forest regions. The following is an example of such an operation.

On one sector of the Soviet-German front the Germans threatened the communications of the advancing Soviet units. A Soviet Armored Guard unit was given the task of removing this threat. The tanks were confronted with a night march of 75 kilometers over a road through forest and swampy localities marred by ruts, shell holes and half ruined bridges, and, most dangerous of all, boulders and water from thawing snow.

From four to six hours remained for march preparations. A group consisting of a traffic platoon, an engineer platoon and an antiaircraft unit was sent out for reconnaissance of the proposed route. The personnel of the tank unit carefully studied the route and all drivers were given special instructions. All machines were carefully checked and all necessary last minute repairs made.

As a result of careful preparations the unit arrived at the assembly point two hours before the allotted time without losing a wheeled or combat vehicle despite the darkness and poor roads. German scout planes combed the vicinity but apparently found no signs of the movement. This is explained mainly by the fact that each man knew the conditions of march and observed well the traffic rules of the column.

Upon arrival at the assembly point, tank and infantry units immediately began to prepare for the attack.

The intended battle ground consisted of forests and marshes. The trees were from 6 to 10 inches in diameter and numbered 300 to 350 per hectare (2.471 acres). The fields were covered with 2 to 3 feet of melting snow. There were few roads or paths in the forest. The Germans, moreover, had entrenched and had mined and placed anti-tank guns on all approaches.

The location of the German defensive system was uncovered by reconnaissance and by raids carried out at all hours of the day and night. It was found that the enemy defense consisted of separate centers of resistance among which the Germans had not yet had time to organize dependable firing communications. It appeared that the dugouts contained only mortars with which to stop attacking troops. Communications between garrisons were maintained by messengers on foot as only a few garrisons had telephones.

The infantry C. O. gave his orders in effect as follows: The first echelon was directed to move forward quickly, penetrating deep into the defense area, disorganizing the de-

fensive system. The second tank echelon, one half to one third as strong as the first and carrying infantry and automatic riflemen, was directed to follow 500 meters behind the first and to overcome the resistance of any remaining defense points. The combat order included the limits of the artillery, the locations of command posts, the firing positions and azimuths of movement. Communications between echelons were directed to be maintained by flares, messenger and radio, and communications between infantry and tanks by visual means.

In view of the conditions of the locality the troops were divided into groups consisting of a rifle company, a mortar platoon and two or three tanks each. Each group was directed to move strictly according to its own azimuth. Movement on roads and paths was strictly forbidden since they were mined and defended by anti-tank weapons. The number of groups depended on the width of the front. The distance between the groups depended on the enemy defense strength, that is, the number of fortified points per kilometer of front.

The attack began at 6 a.m. when the first echelon of tanks and infantry moved forward supported by intense artillery fire. The infantry followed 20 to 50 meters behind and carried on fire from rifles, automatic rifles and machine guns. They soon cut into the enemy defenses and broke his resistance.

By wedging quickly into the enemy defense the first echelon made it impossible for the Germans to open artillery and mortar fire for fear of shooting at their own troops. The Germans attempted to direct the fire close to their defense formations. The second echelon followed 500 meters behind the first and came through unscathed. The Germans were not able to bring accurate fire on the second echelon because the first echelon of tanks and infantry had disrupted communications and had interfered with the German artillery observation.

As the tanks and infantry went deeper into the defensive territory the fighting grew fiercer. Hand-to-hand encounters occurred. The Germans offered strongest resistance in those areas where the garrisons had dugouts. When the Soviet infantry was not able to cope with the dugouts, tanks came to their support. These structures often collapsed under the weight of the tanks.

In one case the tanks could not approach a dugout because of the thick trees that surrounded it. Five or six men were then selected to crawl forward and attack the dugout with hand grenades. One man threw hand grenades at the exit; a second man crawled to the smoke hole and dropped a series of grenades through the chimney into the dugout. The others waited ready to take care of possible counterattacks.

Excellent cooperation was displayed between tanks and infantry. Sometimes a tank, in crushing a dugout, would get trapped in the pit. Part of the infantry took over the defense while the rest helped the tank get out of the pit.

The Germans organized counterattack groups of 60 to 70 men, two or three anti-tank guns, and one or two light mortar batteries. They usually carried their attack not through the forest thickets but along paths and roads. The Soviets answered these attacks by sending two or three tanks with twenty or thirty automatic riflemen in flank or rear counterattacks.

Groups of four or five tanks with infantry and automatic riflemen on them were used to pursue the retreating Germans. These pursuit groups, traveling by azimuth, seized the path and road crossings to hinder the German retreat. They penetrated two or three kilometers into the enemy formation.

—From *Krasnaya Zvezda*

Smoke Saves the Day

By

Lieutenant Colonel William R. Spurlock
Chemical Warfare Service

(Reprinted from *Chemical Warfare Bulletin*, April, 1942)

Lieutenant Colonel Spurlock was Division Chemical Officer during the maneuvers in which the First Cavalry Division participated in the fall of 1941. His article furnishes some vivid examples of the tactical use of smoke.—THE EDITOR.

Due to the very limited amount of smoke munitions available to the First Cavalry Division for the August-September maneuvers last year, it was decided not to use smoke for screening river crossings and other similar problems of the entire Division, but to restrict its use largely to the most mobile elements, namely the 91st Reconnaissance Squadron and Tank Pursuit Squadron.

The 91st Reconnaissance Squadron.

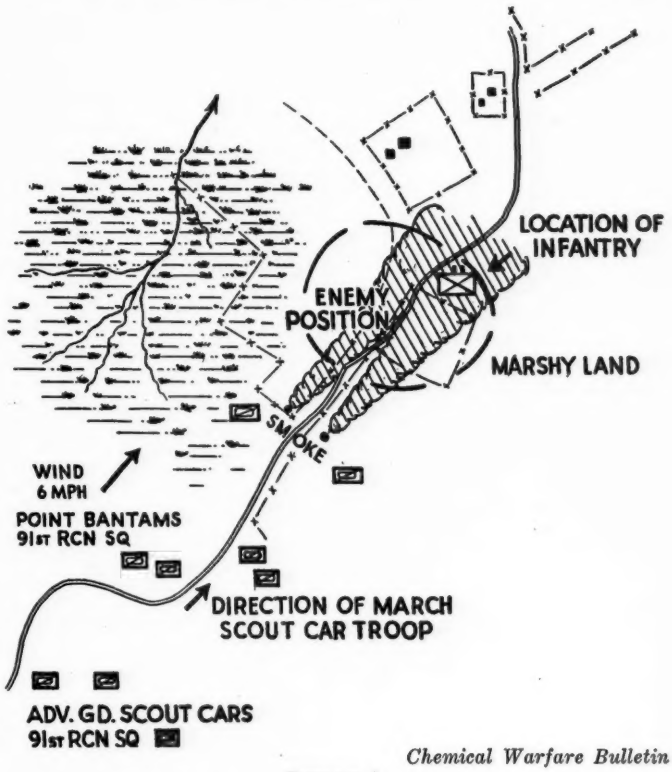
As the name implies, the primary mission of the 91st Reconnaissance Squadron is reconnaissance rather than combat. Frequently, the squadron is far afield and split up into small detachments. A few smoke pots were carried in each vehicle to be used, primarily, in delaying superior forces or as a means of escape. Some examples of these missions follow.

A. Against Armored Column—The Squadron, far in advance of friendly forces was confronted by an armored column of immensely superior fire power. Withdrawal, delaying the enemy at the same time, was the only course open.

Bridges on all sides were demolished, forcing the enemy column to keep on the main highway where they encountered frequent road blocks which were covered by smoke screens. Machine guns were set up in heavy timber alongside the road; and when the enemy dismounted from armored vehicles to remove road blocks, light machine guns were able to inflict heavy casualties and then escape through the smoke before the enemy, his vision completely cut off, could take effective action.

The same operation was repeated several times over a six mile road space until all vehicles of the 91st Reconnaissance Squadron were assembled on the main road in advance of the enemy. The enemy consumed five and one-half hours in advancing six miles. Personnel casualties were ruled so heavy against him that part of his tanks were lacking crews and hence inoperative for the remainder of the day. CN candles had been used in the first of these smoke screens. Since the enemy were without masks, they did not approach succeeding road blocks until the smoke had dispersed, thus allowing more time for construction of sturdier road blocks which in turn caused greater delay.

B. Against Infantry In Position—(See sketch "A.") A reinforced infantry battalion held the area directly astride a road which it was necessary for the Reconnaissance Troop, reinforced with a platoon of engineers, to traverse. The wind was five to seven miles per hour, parallel to the road. Smoke pots were dropped on either side of the road from the first two scout cars, thus enveloping the enemy and rendering aimed fire impossible. A movement of scout cars, launched as quickly as the screen became dense, produced such confusion that the infantry abandoned its mission in order to run out of the screen. The umpire ruled no casualties against the 91st Reconnaissance Squadron other than four scout cars which had run over land mines. All other vehicles, with no personnel losses therefrom, were allowed to pass through enemy area and continue on their mission.

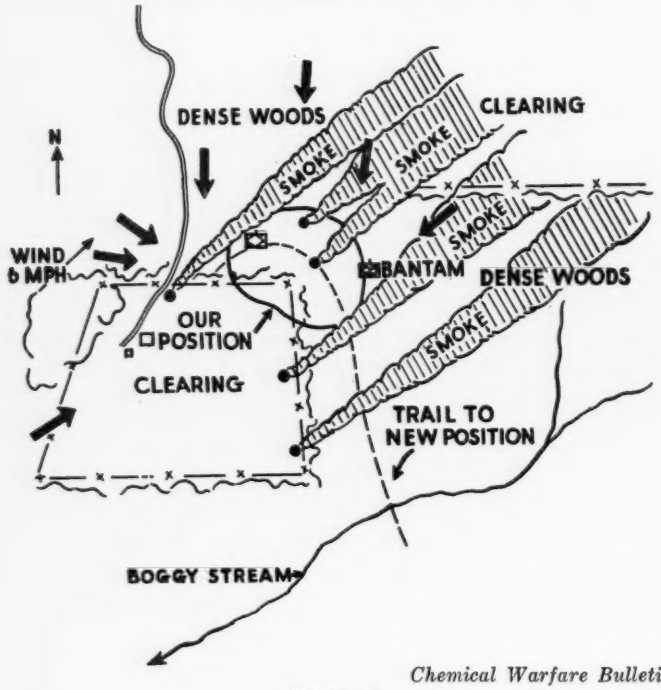


Chemical Warfare Bulletin

Sketch A
Showing Use of Smoke Against Infantry in Position.

C. Against Infantry and Engineers—(See sketch "B.") The 91st Reconnaissance Squadron was completely surrounded, our main body being twenty miles to the south. Wind, southwest, six miles per hour. Enemy attacks were forming from the west, northwest, north, and northeast. Smoke pots were ignited to the immediate west and slightly south of our position, forming a screen in front of attacks from the west and northwest and completely enveloping the attackers on the north. Other pots placed to the immediate north and east completely hid our movements from all the enemy except weak forces southwest of our position. Apparently this small body reported that their vision was clear, for the ensuing noise indi-

cated that the stronger force to our west was moving to join the small force to the southwest. Two pots were ignited to our south, another two pots fifty yards south of those two. Our vehicles escaped by driving through these thin screens.

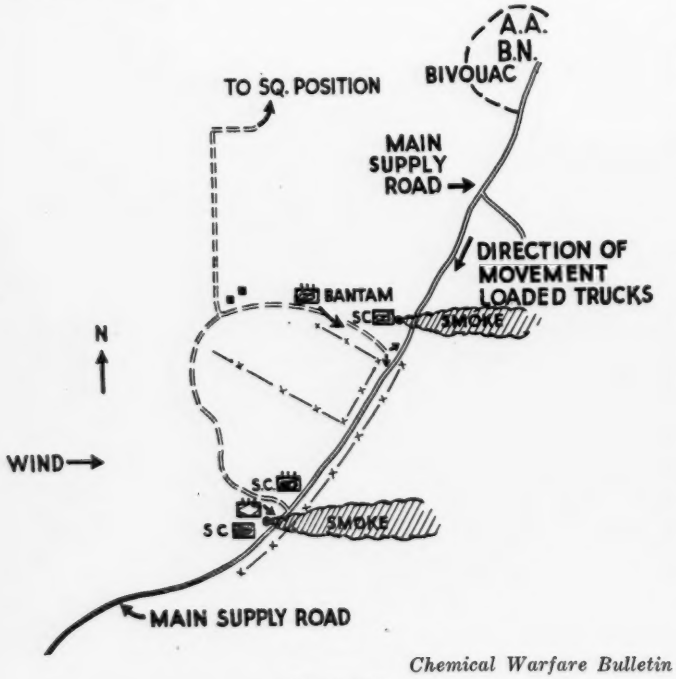


Chemical Warfare Bulletin

SKETCH B

SHOWING USE OF SMOKE AGAINST SUPERIOR FORCES OF ENGINEERS AND INFANTRY. HEAVY ARROWS INDICATE ENEMY ATTACKS.

The leading drivers, having gone out to lay the pots, had a general idea of constructions, etc. and were able to lead the column at reasonable speed despite the smoke. Once outside the enemy positions, our escape was easy because of our great mobility. This was accomplished without loss of a vehicle or man.



Chemical Warfare Bulletin

SKETCH C

SHOWING USE OF SMOKE AGAINST TRUCK COLUMN.

D. AGAINST TRUCK COLUMN—(See sketch "C.") The squadron was in hiding about two miles off the enemy's main supply road. Our area was heavily wooded. The trail from our position met two side roads which joined the main road approximately three quarters of a mile apart. A detachment of six tanks, four scout cars, and eight bantams was given the mission of capturing enemy rations and gasoline. Two scout cars with radios were stationed in the brush within clear view of the main road, one near the junction of each side road and another along the main road two hundred yards from the side roads. Each radio operator had two smoke pots. When gasoline and ration trucks passed the north scout car, the detachment commander was notified. The commander confirmed this report and ordered road stations to block the main highway with smoke screens. The screens concealed our operations from approaching vehicles and forced them to halt. When the screens were well established, our bantams and tanks came out of the woods beside the road, surrounded the ration and gasoline trucks, and escorted them along one of the side roads into our bivouac area. When the smoke cleared, no vehicles were to be seen on the road. Casualties, none. Results, twenty-five trucks captured.

The officers of the 91st Reconnaissance Squadron report smoke a very effective weapon in its type of operations not only for the obscuring power, but also for the confusion it produces. Frequently they took no action until the smoke had cleared. The effect on troops is considerably greater when they are actually in the smoke.

THE TANK PURSUIT SQUADRON

The Tank Pursuit Squadron, First Cavalry Division, was a provisional unit comprising Antitank Troops of the First Cavalry Division and Special Weapons Troops of the First and Second Cavalry Brigades.

The ability to bring heavy fire power at a given point in a short time being of paramount importance to the organization, it follows that any action delaying movement of opposing forces will be of greatest value. Like the Reconnaissance Squadron, this unit is often widely separated into weak forces; however, when enemy tanks are encountered they are usually of sufficient number to require considerable force to eliminate them.

SMOKE COMPLETELY DISORGANIZES TANK ATTACK

It was in just such a situation that smoke was used on the largest scale, at Zwolle, Louisiana. A sergeant and a private first class, both qualified smoke experts, had been attached to the Tank Pursuit Squadron from Division Chemical Officers' Detachment to supervise and assist in smoke operations.

The bulk of the Tank Pursuit Squadron's fire power was positioned across highway 171 just south of Zwolle when a number of tanks attacked from the south. Upon being stopped by a superior fire power, the tank commander returned south on highway 171, met his reinforcements, and then started his maneuver, a wide swing about our left flank to enter the town of Zwolle from the east. A smoke detail under command of the chemical warfare sergeant, mounted in bantams, came through town and was able to lay a screen, although a thin one, for about half a mile along the edge of the forest just ahead of attacking tanks. This screen, though

hurriedly placed and rather thin, slowed the tanks to such an extent that 37-mm guns and 50 cal. machine guns were able to move from the south side of town to the east to meet the attack. This delaying of the tanks gave an opportunity which was seized upon by smoke details to place an extremely dense and wide screen approximately one hundred yards in front of the positions to which our anti-tank guns were moving. Upon encountering the second screen the tank commander halted before entering, evidently to gather force. While he waited, the first screen was dispersed, and tanks massed in front of the second screen for attack through it. Having encountered little difficulty in the first screen, they approached the second at high speed and in close formation. This screen was wide and very dense; and evidently each driver reacted differently to the impaired vision, some slowed to a snail's pace, others gunned their motors, and still others lost direction, colliding with one another and with obstacles which they were unable to see through the smoke. Many tanks were thus immobilized and the mass attack was completely disorganized. Only a fraction of their number were ever able to come through the screen and they came singly and widely separated, hence were easy targets for antitank gunners who were able to see the emerging tanks long before the tank crews could see the guns.

A number of our guns, arriving late at the new position, were not needed on the front; so they made a flanking attack around the enemy's left to his rear and, as the smoke lifted, captured or destroyed the immobilized tanks. The victory of the Tank Pursuit Squadron was so complete that the umpires declared the "battle" closed in that sector.

Photo by U. S. Signal Corps

TWO CONFUSED TANK CREWS SURVEY THE SITUATION AFTER BREAKING THROUGH A DENSE SMOKE SCREEN.

A third type of smoke operations executed by the First Cavalry Division was its ground troops defense of a headquarters against enemy tanks. This operation was conducted by the division chemical detachment of six men assisted by a like number of soldiers from the division signal troop who were entirely untrained in smoke tactics.

Photo by U. S. Signal Corps

TWO TANKS ARE SHOWN EMERGING AFTER HAVING SUCCESSFULLY MANEUVERED THROUGH A DENSE SMOKE SCREEN.

The rear echelon, Headquarters First Cavalry Division, was bivouacked in heavy woods on the east bank of a small stream coursing southwest-northeast. A three mile per hour wind blew from the east. A detachment of eight enemy tanks attacked along the stream bed from the southwest while half-track scout cars with mounted machine guns simultaneously attacked from the south. The only armament of the headquarters was one antitank gun, 37-mm; two machine guns, 50 cal.; and one machine gun, 30 cal., mounted on a scout car which had been ruled out of action at first contact.

Smoke Successful In Defending Headquarters

Smoke pots were placed approximately twenty yards apart along the southern boundary of the area. The smoke dispersed widely in the low velocity wind, forming a screen to the south and southwest, forcing the tanks into a wide circling movement, and thus allowing ample time to set pots for another screen on our west. The drifting smoke from the two emplacements of pots formed an area approximately two hundred yards in depth through which it was necessary for the tanks to pass in order to attack our positions. Due to obscured vision, tanks collided with large trees, with one another, drove into marshy places along the stream, and were completely disorganized. Only one of the eight tanks emerged on our side of the screen during its six or eight minutes' duration.

Here, as in every case, tanks failed to operate with any degree of success when enveloped in smoke. This operation suggested the feasibility of arming foot troops with smoke pots and "molotov cocktails" to combat tanks. This would be especially effective among large trees or other natural obstacles. The men on foot can operate in the smoke and are able to hear and see the tanks long before being observed. In a dense screen, tank movement is so low as to be easily dodged while the men, advancing singly by bounds from one tree to another, can easily approach near enough to throw gasoline filled bottles against the tanks, setting them on fire and forcing the crews to abandon all but hand weapons.

Results of smoke against armored forces were extremely gratifying in every case. The personal reaction of drivers is so different and so unpredictable that mass attack is impossible, and it is doubted if training can overcome the handicap; for even if constant speed is maintained by all drivers, loss of direction in a screen of considerable size will act to disorganize formations and produce confusion and, in many cases, collisions of the vehicles with one another as well as with natural obstacles. The greater the number of tanks involved, the more certain are they to become confused and disorganized.

The Essence of Morale

By

Lieutenant Colonel John B. Bennet, *Infantry*,
Instructor, Command and General Staff School.

Good morale, efficient leadership, sound training, and adequate equipment are the four cornerstones of success in battle.

Newman, in his book, "The Tools of War," states: "Morale is what you cannot do without, but is not worth much by itself—morale alone cannot take a machine gun or stop a tank—unsupported morale results in what is known in tennis as a nice try."

The dictionary defines morale in its military sense as: "The mental state of an army." A mental state is a condition of mind—an attitude. In its broader sense it could be an attitude toward any particular objective.

But since we are here concerned with morale in war—and since it is axiomatic that, "The ultimate objective of all military operations is the destruction of the enemy's armed forces in battle," then this "mental state of an army" in which we are concerned is the attitude of the army towards this objective. This attitude may be termed its battlefield morale or the mental state of an army toward battle.

The measure of this attitude, individually and collectively, will always depend upon the presence and vigor of certain mental qualities—inherent or induced in each soldier these qualities being:

Patriotism	—for one's country
Loyalty	—towards one's leaders
Hope	—for victory
Confidence	—in self and leaders
Zeal	—in performance of duty
Aggressiveness	—to attack tasks
Perseverance	—to endure hardship
Pride	—in self and unit
Courage	—in face of danger
Sacrifice	—for comrades and country

Responsibility for the development and maintenance of a healthy condition of these qualities in each soldier and in the unit rests squarely upon the shoulders of every commander and staff officer.

These results can be secured by considered application of efficient leadership to the routine tasks and problems found in any unit.

Under the assumption that leadership is efficient and that morale will be measured by the condition of these inherent qualities assigned it, let us now examine some concrete means available in any unit and discuss how leadership can employ these means to secure and maintain good morale in the soldier and unit.

Education

A recruit enters the army with his own ideas regarding the war and the part he wishes to play in it. These ideas, in varied degree and intensity for each individual, will range from all-out adherence to the national ideals, through conscientious objection to a complete disagreement with national policies and with war in general. Consequently, it is apparent that a mental conditioning of the recruit to modify his civilian ideas so that they coincide with army ideals is of primary importance. This education is effected through group conferences by selected officers or through personal interview in which these selected officers should:

tell why we are in this war;
show what will happen to us, our families, and all that makes life worth while, if we lose;
prove to each man that we can win this war, but be frank about how difficult it is going to be doing it;
picture the enemy as the tough customer he is, but convince everyone we can, and must, get still tougher;
build up hate for the enemy—cold, calculating and relentless.

Through this education and by example, give purpose and objective to all army ideals in order to increase patriotism, zeal, courage, and sacrifice in each man.

Classification

When a recruit comes to your unit:

Avoid the round peg in the square hole.
Classification generally places the recruit according to his civilian occupation.
Consider also his avocation or hobby when you receive him in your unit, since avocation and occupation do not always coincide.
Strike a balance between avocation and occupation, then assign the recruit his place in your unit. Initiative, zeal, self confidence, perseverance, loyalty, and pride will be the dividends for your extra effort.

Welfare

Legislation is pending to provide additional aid for a soldier's dependents. (4 June 1942.)

The Red Cross will help adjust domestic difficulties. You must find out each soldier's problem, then help follow through to a solution.

See to it that he gets these benefits if he needs them.

Assure regular mail service between home and soldier, and let your effort be to see that news both ways is cheerful.

Free each man from these home worries, show sympathy and consideration toward these problems; and receptiveness, contentment, affection, and loyalty in each man will be your reward.

Living conditions in camp and in the field are seldom ideal, particularly during war. However, most men are reasonable and forbearing, even under the most adverse conditions, provided they are convinced that these conditions are unavoidable and are not the result of poor command and staff work.

Your men are not babies and do not want to be pampered, but they are human; and it is human to expect the maximum in comfort, conveniences, and necessities consistent with the situation and potential availability of these comforts. Therefore, check that all units get their proper shares of available supplies; insure that these supplies get up to each unit; and watch the messes, as poor cooks can and will make the finest food unpalatable.

Constantly seek ways to improve sleeping, toilet, and bathing facilities if these are inadequate. Be aggressive, show initiative, and where necessary, improvise to secure these things.

Sincere efforts on your part, though perhaps unproductive of ideal conditions, will be observed and appreciated by every man in the unit, causing the men to develop loyalty, confidence, and affection for you.

Zeal, perserverance, pride in unit, and a willingness to sacrifice will be engendered in each soldier.

Physical Conditioning

Selective service, particularly with the present relaxed physical requirements, will seldom find a recruit with the physical attributes of a ready-made soldier.

Intense physical conditioning must be employed during training to harden each man and develop endurance to meet the rigors of long marches, short rations, outdoor living, and loss of sleep incident to warfare.

Therefore include this ideal of utmost endurance in all instructions and sell the idea of its necessity to every man.

Impose conditioning measures intensively, but adjust their severity to the current physical capabilities of each man.

Resulting body fitness and endurance will promote self-confidence, pride, zeal, aggressiveness, perseverance, and courage.

Individual Training

In this age of vanishing frontiers, the pioneer with hunting and stalking skill has all but disappeared.

Yet this same ability is essential on the battlefield and must be learned by every soldier.

With this in view, concentrate on weapon employment and effective use of cover and concealment. Be satisfied with nothing short of perfection, never allowing any man to forget that upon these skills depend his survival and his enemy's destruction.

Attainment of proficiency in the use of weapons and terrain, coupled with aggressiveness founded on physical fitness, induces in each man a sense of self-confidence, pride, initiative, and courage.

Equipment

It seems almost needless to indicate that clothing appropriate to the climate contributes to contentment, endurance, and efficiency, that weapons more efficient than those of the enemy will induce a sense of superiority and encourage self-confidence.

On the other hand, unnecessary equipment issued and employed during training, upon which a soldier becomes dependent, is a distinct handicap upon the battlefield.

Too much equipment immobilizes, and dependence upon superfluous equipment leaves the man helpless when this excess must be discarded.

Accustomed by training to streamlined equipment and convinced of his self-sufficiency, each man will gain pride in his attainment and confidence in his ability to outmarch and outfight the enemy.

Recreation

"Refreshment of strength and spirits after toil."

Dances, movies, and other recreational aids never directly contribute to the building of fighting spirit; nevertheless, recreation is important and has a place in the promotion of morale.

Intensive application of all measures that build morale, without relaxation of any sort, will soon defeat its own objective.

Relaxation of these intensive measures, a breather or rest as a prelude to further efforts will refresh lagging strength and spirits, thus enhancing ultimate results.

It will be exceptional to find recreational means established and operating in new units in camps or in the field. The soldier, left to his own devices and not provided with recreational means, will become bored and dissatisfied and thus may be led into trouble.

Consequently, command and staff must anticipate this need, take energetic steps to secure and improvise recreational means, and insure that the means available are fully exploited. It is their responsibility to see that during periods of rest and relaxation no one is forced, through lack of recreational means, to do nothing.

Boredom is one of morale's worst foes.

Unit Training

The pattern of morale attributes engendered through unit training will be an increase and extension of the attributes secured by individual training.

The soldier, confident in his newly found ability to stalk and kill, now finds himself a member of a group whose other members are all imbued with this same spirit.

Here, like a football player that has learned the fundamentals and then runs through team formations, he begins to see how his abilities, employed with those of his comrades, will be more effective as a unit.

From this realization comes a desire for cooperation, cohesion of effort, and birth of unit confidence and pride.

It is at this stage in morale development that the effects of good or poor leadership in the unit commander will be most critical.

For it is at this time that each commander must begin and continue to prove to his unit that he has the endurance, the aggressiveness, the knowledge, and the ability to take the unit into battle, handle it well in the fight, whip the enemy, and bring it out without needless sacrifice.

Prove this to your unit, and a fighting outfit will be welded; fail, and other morale measures are wasted.

Comradeship

Working, resting, playing together; sharing the same tasks and pleasures; enduring the same hardships and dangers will develop mutual consideration, respect, and friendship among the men in a unit. Friendship gained under such circumstances becomes something more durable and potent—we call it comradeship.

In a unit, whose other morale factors are healthy, comradeship will develop of itself among the majority of the men.

Leadership can hasten the development and maintain comradeship in the unit by eliminating incompatible individuals and by preventing needless disruption of the unit once formed.

Comradeship secured manifiests itself in the unit by loyalty, confidence, zeal, perseverance, pride, courage, and sacrifice.

Command, Staff, and Weapon Support

Though indirect, the influence of the higher command and staff upon the morale of a unit is none the less potent.

Efficient functioning of command and staff promotes confidence, zeal, pride, and aggressiveness. Poor command and staff work cannot be hidden, and the unnecessary danger, fatigue, and trouble it causes the troops will destroy morale.

Commanders demand loyalty from their subordinates, sometimes forgetting that loyalty in return is the one price that will secure it.

Staff officers have a double allegiance, to their commander and to the line. They must never forget that loyalty, tact, and consideration are debts they owe the troops that execute their plans.

Commanders and staff that show understanding of their subordinate units' problems and hardships and express appreciation of their efforts in surmounting them can expect and will receive in return loyalty, zeal, and sacrifice.

Weapon support, or its lack, is a morale factor in battle.

Wide deployment and hostile fire create an impression in every man and unit that they are fighting the war alone. It is at this time, when feeling their outfit has been shoved into the fight and forgotten, that the sound of supporting artillery fire and the sight of friendly planes overhead dissipates loneliness, renews courage, zeal, and aggressiveness, giving confidence that they are not forgotten but are only part of a larger team.

In conclusion, it may be stated:

Battlefield morale in your unit will be what you make it.

The men you have under you are the finest in the world.

Their minds will be sensitive and receptive to your efforts.

Sincere efforts on your part will be more than repaid.

Your means are adequate and can be made effective.

Whether test of battle finds your unit with high morale and a harvest of victorious laurels or with low morale and a gathering of the grapes of wrath is up to you and your leadership.

Jungle Warfare

By

Lieutenant Colonel Henry E. Kelly, *Infantry*
Instructor, Command and General Staff School

"In jungle warfare the soldier fights two enemies: man and nature."

So states our recently published Field Manual 31-20, "Jungle Warfare," in a striking opening sentence.

Let us consider this statement; its truth is obvious and yet it can be proved equally false, as Japanese troops have demonstrated only recently in the dense and difficult jungle of the Malayan Peninsula.

For nature is no fickle jade but bestows her favors with constancy on those who understand her. With this in mind, let us reduce to fundamentals the problems of a jungle operation and build around these fundamentals a solution.

Jungle combat is classified as a special operation primarily because inherent difficulties of *terrain, climate* and *visibility* complicate the vital problems of *command, movement* and *supply* to the point that normal methods cease to apply.

A special problem requires a special solution, in this case a *task force* specially organized, equipped, trained, and supplied. Such an instrument in the hands of a qualified leader will exploit natural difficulties and thus comparatively speaking, convert natural obstacles into advantages.

A force of this type may be regularly organized by special tables of organization for the particular purpose. More often, though, the commander in the field will have to improvise it by discarding non-essentials and pooling available essentials, including if necessary even local civilian equipment and labor.

Rarely will an entire command be thus organized, since a task force suitable for jungle combat must necessarily be so lightly armed that it would be ineffective in attack against a strongly organized position with secure flanks. Once such a position is reached, the mission of the task force is complete. The attack of the position must be taken over by the balance of the force which, with its heavy equipment, has been held back awaiting the moment. Before this can be accomplished, a line of communications will have to be established by road or water. Construction of such a route behind the cover of the task force will be an important phase of the campaign, unless in deed the task force has simplified the problem by seizing an existing route during its advance.

This phase of the operation is not properly part of the problem of jungle combat, and is touched upon only to indicate the command problem involved in deciding upon what proportion of the command should be converted into the jungle task force. In sections of the world such as South Africa, conditions may limit opposing forces exclusively to lightly armed jungle troops. In such cases, the final decision may be won by jungle columns, but this will be the exception, not the rule.

Having decided upon the strength of the jungle force, the problem of selection of personnel is in order. Quality is the basic prerequisite; mere numbers may prove only a liability. Physical fitness is an absolute essential in the jungle where climate, terrain, hardship, and strain combine to magnify each minor weakness.

Among the first to be eliminated are men over forty, in all grades. The middle-aged man is not a good prospect for jungle service, when a casualty may require from eight to twelve men to evacuate by the laborious, and often futile, "hand carry."

All men of such a force must be protected by inoculations and properly acclimated and hardened as soon as possible. Reports from Malaya indicate that not the least of the British difficulties were excessive casualties and exhaustion among recently arrived unacclimated troops. To acclimate green troops will require an average period of six weeks to two months though, of course, basic training and physical conditioning can be conducted concurrently during this period. Hardening of course, will take much longer. For example, the Japanese trained under service conditions for the best part of a year prior to their Malayan and Philippine campaigns. A unit cannot be considered fully conditioned for jungle service until it can make a full day's march under jungle conditions with full equipment, and continue this routine almost indefinitely. Many a unit, hard enough for flat country work with stripped packs, will wilt once it attempts to carry its equipment up and down muddy hills, day in and out, with the fording of two or three rivers a day thrown in for good measure. In gradually bringing troops to the desired level of condition, comfort is facilitated if prepared camps await the end of the first few hikes, provided this consideration is secondary to the selection of a route of suitable severity.

Basic jungle technique must be covered during this hardening period. Hygiene and sanitation, both important subjects, are fully covered in FM 31-20, but it is worthwhile to stress again that an overwhelming proportion of the sick rate in a new outfit is due to chilling caused by too rapid cooling off when overheated. To guard against the early morning chill all men must be required to sleep covered, as well as to carry a dry shirt handy for use at a prolonged halt. The temptation to cool off in a breeze, if not resisted, may cost many days of effectiveness, not only through colds and other troubles but by intestinal upsets. Many men habitually march with a towel around their neck or in their belt, a comfortable habit in a climate where prespiration runs in a steady trickle. Recruits new to the tropics must also guard against excessive loss of the salt content of the body. In spite of constant warning on this fact, many a new recruit arriving in the tropics is alarmed by what he considers to be an acute case of appendicitis, but which almost invariably proves to be "salt cramps."

A new unit must be practically trained in basic jungle and weapon techniques. Each soldier must be confident of his ability to orient himself as to his location and to main-

tain his direction. Ability to use the compass, compute location by dead reckoning, mark routes and use previously prepared sketches in conjunction with a knowledge of the drainage system of a given area is all important. Systematic practice in the use of the machete will pay big dividends later, for the combination—sharp machete, green soldier, green bough, can be counted on for many a serious jungle accident. Swimming is a "must" in the basic training of a jungaleer, as is the ability to construct the simple jungle shelters, rafts and bridges required.

The sum of this basic training must produce individuals confident of their ability to move and maintain themselves in the jungle. Such men will not be "trail bound," a fatal weakness of the inexperienced jungaleer. The problem of welding individuals so trained into an effective jungle force will therefore be relatively simple.

A soldier thoroughly indoctrinated with the doctrine of the machete realizes that a trail is not an actual defile, but that by picking his route, he can cut cross-country with fair ease for short distances. One glance at a unit during a march halt will indicate its status of training. A well trained unit will be resting comfortably in individual shady niches, slashed rapidly off from the trail. A "trail bound" unit will be sprawled, blocking the trail, vulnerable not only to surprise but to every bolting "jar head." Such a unit can not hope for success in jungle fighting.

Weapon training must stress care and cleaning to offset the unfavorable conditions encountered. All-round familiarity with all light-weight, shortrange weapons, including the light mortar, is important; marksmanship need stress only short range accuracy, but technique of fire must include practical training in engaging unseen targets by economic neutralization of a suspected small area. Such an area may include trees containing snipers, or a critical locality dominating a defile, such as a stream crossing.

The individual equipment of a jungle soldier brings us squarely up against the jungle's basic law controlling all matters of equipment and supply: absolute *necessity*, not *desirability*, governs. Ironically enough in this age of motor-minded infantry, loath to march even with stripped equipment, each member of a jungle task force must carry everything needed to maintain him, including weapons, ammunition, and as large a reserve ration as possible; all this under the most unfavorable conditions of terrain and climate. In deciding on the necessity of an item, picture yourself climbing a six hundred foot, thirty degree slope out of a muddy stream bottom, with footing that keeps you in constant doubt as to whether you are even holding your own. Bear in mind that this is just one of scores of similar grades you're pushed up during the day, often doubtful whether you've strength enough to pull your rear foot ahead of the forward one. If, with this picture in mind, you still want the item in question in your equipment, why write it in lightly. How about such items as a four-pound blanket, a three-pound raincoat, or a twenty-pound weapon? If you'll settle for a load of about twenty-five pounds, exclusive of weapons, here's suggested individual equipment:

Hammock—small jungle shelter can provide protection against rain	
Ground sheet plus *sand flea* bar	4 lbs
Web equipment and mess gear (should be lightened by use of special equipment)	6 lbs
(14th Inf. jungle platoon is working with a new lightweight pack adopted from commercial ski knapsacks)	
Rations (carry meal, plus "X" ration) and water	5 lbs
Toilet articles and spare clothing	4 lbs
Machete and 60 rounds of caliber .30, plus miscellaneous small articles	6 lbs
	25 lbs

Remember though this is a maximum. Reports indicate that Japanese jungle units carry and wear very little.

The vital need of "streamlining" individual equipment of a jungle task force by the use of special equipment should be obvious. For example, the issue blanket will weigh about four pounds, the raincoat and shelter half together an additional five. A combination poncho-ground sheet-shelter half will have dual purpose as a raincoat (useful at halt only, due to heat) and also afford excellent possibilities for group use in jungle shelters as roof, ground sheet or cover. In reducing weapon weight, the new .30 caliber carbine, the submachine gun, as well as lighter caliber or reduced charge ammunition, all offer important possibilities in conserving the effectiveness of a jungle task force.

Use of coveralls as a uniform is believed good. They provide comfort, protection against bugs entering around waist, and are generally lighter in weight than shirt and trousers.

Along these lines, the need for *best quality* equipment should be stressed. Anyone who has seen jungle mud suck the entire sole and heel from a pair of dried-out but brand-new issue shoes, can understand this need. The 14th Infantry is working with a rubber-soled sneaker; however, it seems that such a shoe is too light. Much of our equipment is not suited for jungle service—for example, the woolen shirt rots and shrinks too rapidly to be depended on. Replacement, always a problem, is facilitated by having each man prepare a duplicate set of clothing, tied, tagged and packed into squad bags prior to departure from the unit base. This equipment is left in charge of a caretaker familiar with the arrangement, permitting accurate and rapid procurement of critical replacement equipment on radio requisition.

The dictate of necessity governs organization equipment as rigidly as it does the equipment of the individual. It is difficult for one accustomed to think in units of ton-and-a-half trucks to adopt the mule, with a pay load of 175 to 200 pounds, as the unit of transportation, particularly when even this limited capacity is reduced another ten percent by the necessity of providing food for the animal. It will therefore take seventeen animals to replace a single ton-and-a-half truck and this over terrain which will normally preclude the use of herded animals and require individual mule leaders. Tables of organization suitable for use with a motorized unit require radical revision for a pack outfit, either by reducing the number of organic weapons or by an increase in the strength of organization chiefly to provide mule leaders.

Companies and similar units will frequently have only one baggage animal. This will limit organization to three

or four nested boilers, a stripped field range or a grate to set the boilers on while cooking, together with a tent fly for the cooks, a few necessary implements, tools, and a couple of lanterns to complete the load. Occasionally skeletonized bedding for officers can be carried, but generally an officer has what he carries on his back.

Transportation requirements for rations, can be estimated by allowing four pounds per man for the "B" or "C" rations and a little under two pounds if the concentrated "X" ration is carried. This ration makes an excellent reserve, and will serve for use over extended periods as a concentrated ration when the situation requires that a unit be completely self contained. Rations, of course, should be removed from heavy containers. A convenient method is to carry them sacked and tagged as to contents. An animal can carry a day's ration for forty-five men or about a platoon, sacked in three bags, each containing a meal and carried as top and side loads. If concentrated rations are used, twice that number can be provided for. Simplicity is the keynote, and the problem would of course be lightened if we could supply our troops in this fashion.

Armament must conform to the same stern dictate—necessity rather than durability. The hand carried weapons of a jungle force must be rugged and light enough in weight to be carried under the conditions encountered. Range and power must be sacrificed to permit this; fortunately these qualities are of limited value in the jungle. Weapons should not exceed ten pounds in weight and every pound saved means additional ammunition with the weapon.

The new caliber .30 carbine weighs five pounds and is only 36 inches in length, with sufficient accuracy to 300 yards. It would seem to afford an excellent replacement for the M1 rifle weighing about twice as much. The caliber .45 submachine gun weighing less than 11 pounds, has the same usable range as the carbine and may well replace both automatic rifle and light machine gun with their respective weights of twenty-three and a half and forty-five pounds.

The machete, modified if possible for double purpose as a carbine bayonet, together with a well chosen stock of grenades would complete the hand carried armament of our force.

The 60-mm mortar, weighing only thirty-eight pounds and breaking down into easily carried hand loads is an excellent high angle weapon and would be the lightest of our pack load weapons. Extremely accurate, it can throw its three pound shells a distance of over a mile, making any limitation on employment one of observation rather than range. Approximately fifty rounds, housed in fitted pockets on the pack saddle could be carried on the gun mule in addition to another sixty rounds on an ammunition mule. This would make a good day of fire with the mortar. Even so, weight is considered so vital that the Japanese equivalent, the 50-mm grenade thrower weighs only ten and a half pounds throwing its grenade missile up to 700 yards with, of course, decreased accuracy.

The 81-mm mortar, weighing one hundred thirty-six pounds, uses a light shell of seven pounds with a maximum range of 3,300 yards. Heavier shells, up to fifteen pounds with considerably reduced range, are available. While the additional weight of this mortar would more than offset its advantages over the lighter mortar for front line use, the 81-mm mortar would provide an excellent replacement for the 2,050 pounds, six mule load, 75-mm howitzer. Using the fifteen pound shell it has a range of just under 1,300 yards, sufficient to take care of all targets, considering the limitations of jungle visibility. The power and radius of burst of its shell compare favorably with that of the twenty-two pound shell of the howitzer, while the latter's range of about 8,000 yards is of doubtful value in the jungle.

Pack artillery, however, would be of great value in the supporting force and with this force would permit it to follow the jungle force more closely.

A limited number of heavy, caliber .30 machine guns should probably be included because of their ability to "tape" key approaches and defiles, but weight should be skeletonized where possible.

Machine-gun ammunition is usually loaded in belts of two hundred fifty rounds, in turn carried in wooden chests which weigh five pounds empty, twenty filled. A saving of twenty-five percent in the dead weight of the container can be made if these chests are eliminated and rolled ammunition belts packed into canvas bags are used with shoulder straps to facilitate hand carry. These in turn are housed in fitted pack saddle pockets.

Riot guns are good for our morale, bad for enemy morale. They are excellent for close work, though heavy and having large ammunition.

An ammunition mule can carry three thousand rounds of machine gun ammunition weighing only one hundred eighty pounds constrasted to a two thousand round load weighing one hundred sixty pounds if chests are used. Similarly, an empty water chest weighs ten pounds and can well be replaced by a desert water bag or similar light weight substitute; in fact, if streams are plentiful an empty container will suffice.

Every effort should be centered about the problem of conserving unit energy by achieving maximum efficiency in unit and organizational equipment. While we cannot do this by handing each man a fistful of rice and a bandoleer of ammunition and bidding him farewell, a balance between such a system and normal methods must be struck if a jungle task force is to have requisite mobility.

Resupply will often be the most difficult problem of the operation. If an advanced railhead, truckhead, or navigation head can be utilized, the problem is relatively simple. Particularly important, since it is more commonly found in jungle country, is the possibility of a water line of communications, which when available should be exploited to the maximum, using native craft if necessary. A large cayuca will carry a cargo of about a ton and a half and in some situations can make several trips daily. When none of these means are practicable, a supply head will have to be pushed forward by higher echelon to supply the jungle force pack train. If even this is impossible, the unit will have to be self-contained for supply by reinforcement with sufficient animals to permit carrying concentrated rations for a prolonged period. Resupply by plane at previously agreed points may be practicable when landing fields or suitable areas for dropping supplies by parachute can be found. Experience has shown it is extremely hard for planes to pick up troops in jungles. Variations and combinations of the foregoing must certainly be developed by the in-

genious jungle supply officer upon whom the success of many an operation will rest.

Unit training must provide for march, approach, and combat formations which permit control while still providing sufficient dispersion to meet jungle conditions of limited visibility and decreased vulnerability to fire. In general this will require a formation of column of file with, of course, adequate security.

Training must stress that this formation must be maintained until it becomes necessary to deploy into skirmish line with limit of visibility interval between men. Maneuver thus consists of outflanking resistance with subordinate columns which break out in column of file from the main column to turn or outflank resistance. Such tactics, instinctive to individuals who have received proper basic training, will turn many a jungle defense with little fighting, when the same position would stop trail-bound troops in place. The tendency of green troops to attempt to fan out individually into skirmish line from a long column of file must be avoided. Such action results in the frontal attack of a prepared position by men already tired by disorganized individual effort and of course directly plays the defender's game.

With this method as a basis, a series of prearranged alternative formations can be developed from which a suitable attack formation can be quickly selected, ordered, and initiated. These formations are based on rearward small units, squads, platoons, or even compaines cutting out from the main trail a predetermined distance to either side, then changing direction to a course paralleling the axial trail by compass azimuth. Naturally each column would furnish its own security using advance scouts. Distances can be prearranged to insure a final interval between skirmishers of limit of visibility for the particular area if frontal attack is desired: for example, with three pace limit of visibility each squad would uncover preceding squad by only thirty paces before paralleling the axis of advance. A continuous skirmish line for a frontal attack with minimum physical exertion and maximum control would thus be secured. The flank movement can readily be increased to completely skirt and bypass a strong point blocking an axial route with a view to reducing it from the rear, sometimes in conjunction with frontal attack by a more heavily armed force. This operation constantly used by the Japanese in Malaya, frequently forced the retirement of strong forces blocking axial routes through the mere threat of being cut off.

From the opposite angle, defense against such a method of attack is difficult. It must be characterized by an extremely active attitude in which the forces posted to defend strong points blocking avenues of approach by fire are backed up by numerous local reserves distributed to facilitate their engaging of infiltrating detachments after these detachments are beyond supporting distance of main attack force. Depending on the terrain and known hostile mission, this might involve distribution on a wide front or in depth. Where the axial route is so vital to the hostile advance that it must be secured, reserves in depth could be used since the attacker must secure the axial route, and thus the infiltrating forces must eventually attack to secure it. Reserves in such a situation can move back and forth along interior lines using the route itself for movement with reduced resultant fatigue. At other times a stream or other obstacle parallel to and in rear of the blocking force will provide a line upon which the action of these reserves can be coordinated in mopping up offensive infiltration. A combination of the two methods may sometimes be required. In general the defender must meet the attacker's mobility with the equal mobility of numerous support and reserve groups which back up the blocking position and offset offensive initiative by proper use of the terrain and interior lines. Unacclimated, trail bound troops are useless in such a defense which, like jungle attack, depends upon lightly armed troops able to move freely *off trails*. Any means to conserve energy and facilitate movement is vital. Local guides whose devotion is guaranteed by friendship or hostages, small local craft to increase value of water routes are valuable. Proper conditioning of troops coupled with familiarity with the area of operations and the tactics to be employed are of course basic essentials of successful attack or defense. It must be realized that while troops are not bound to trails for tactical maneuver or the movement of small parties, large forces are bound to existing routes for long marches, as are the supply columns even of pack animals. March security of these long columns of file constitute a special problem. A regiment in this formation will stretch over a day's march on difficult terrain. Fortunately the length of the column itself makes local surprise of head or tail relatively unimportant. Security of the flanks must be achieved by dropping off standing patrols at key points from an advance detachment which marches several hours in advance. These patrols will push off the trail far enough for good observation, or even more important, listening posts. They remain in contact by connecting file with the axial trail and are picked up by prearranged plan after the column clears. These measures, combined with prearranged rehearsel plans to meet flank attack by rapid movement to the flank into the woods, should suffice.

Early knowledge of the area of operations is facilitated by decentralizing reconnaissance to subordinate units, alloting sectors to each and rotating these sectors as time permits. This system furnishes at least one organization familiar with each area as soon as possible.

Maps will usually be inaccurate and the dense vegetation will make aerial photographs of limited value. A system of reconnaissance sketches based on the horizontal control afforded by a good vertical photo will make a good map substitute once reproduced. Mounted reconnaissance detachments are valuable, but in wet weather the value of the information they may obtain must be weighed against the damage they will do to the trail if the trail must be used by our troops. Occasionally the width of the trail combined with rigid trail discipline will permit leaving a narrow footpath.

Movement will be based on orientation depending on compass combined with dead reckoning on time available maps, known drainage system, and all other means available.

The idea of following stream lines, which is frequently advocated, is usually impracticable due to greater density of vegetation, steep banks, swamps, and cross tributaries. Ridge lines form the usual skeleton for movement. Local guides are valuable when properly handled. They must not be permitted to answer questions by a simple affirmative, since that is the usual answer when the native does not understand the question or considers a negative answer would be unwelcome. As a native talks, using many gestures,

a good indication of the value of his knowledge can be obtained from his assurance and certainty. Many trails will be found which do not show on any map, particularly in areas where natives are confined to land travel. On the other hand, in difficult terrain where water routes are available there may be no through trails.

Water transportation is often the best means of reconnaissance. Among the reports from Malaya difficult to understand is one stating that the Japanese used the native boats, which the British must have permitted to fall into their hands.

Halt security is facilitated by camping in depth along the route of march. This is fortunate since it would be impossible to close long columns into a conventional bivouac. Each march unit camps along route with its subordinate units well in hand.

Security is furnished by local listening posts aided by a system of roping in units with twine or tent ropes hung with cans or mess gear. The security of a camp in a clearing is difficult against harassment or air attack. Any surprise of a camp in depth is local and can be minimized by prearranged plans to meet such attack combined with readiness of troops. The advantage of a hilltop location of a bivouac, relative coolness and freedom from insects, must be weighed against the accessibility to water of a bivouac close to a stream. The latter advantage will frequently be decisive in event of a late halt or contemplated early march.

A march should not be begun until an hour after daylight unless the situation demands. Not only does breaking camp and the preparation of a meal take twice as long in the darkness, but in malarial country the men are exposed during hours of greatest danger of infection. It is this factor of dawn exposure that increases the malarial rate among cooks, mule leaders and other personnel whose duties require exposure during this period.

Jungle communications will depend largely on radio, handicapped as it is by numerous dead spaces and reduced range. Runners, visual signals, and pigeons are valuable supplementary means within their limitations. The transportation problem will usually preclude extensive use of wire, though existing lines will be of great value wherever available. Limited communication means tend to enhance the value of advance alternative planning, particularly if authority to order execution of selected plan is also decentralized to subordinate commanders.

In conclusion it would seem that the basic problem of jungle warfare is one of successful movement; hence basic training must produce men able to maintain themselves in the jungle.

Such men properly equipped and organized into a task force should be able to reach a desired objective in condition to apply a simple previously rehearsed procedure selected from several alternative "plays" understood by all. Simplicity should be the keynote of these procedures backed up by planned control.

Some Aspects of Mountain Warfare

By

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The geographic locations of our national mountain chains are of secondary strategic importance in any continental defense plan. Consequently, we have treated mountain warfare problems from an academic rather than from a practical point of view. European mountain-chains are of primary strategic importance, and nations on that continent have devoted much thought and training to mountain operations. We have had some maneuver experiences in the Philippines and in Hawaii, but these were limited in extent and were confined to low altitudes as over against the vast and high ranges where we might at some time conceivably be engaged.

This war is being fought in all climes and at all altitudes, and we must be prepared to engage in mountain combat. History affords us examples of troops from the plains conducting successful mountain operations, but it is reasonable to suppose that trained troops are capable of greater and more rapid success in the high altitude than untrained units.

Faced with the necessity of providing ourselves with units for high altitude operations and having only begun experiments along these lines, what are the basic problems facing us? They can be generally stated as follows:

1. Personnel
2. Equipment
3. Physical and mental conditioning of the troops
4. Tactical Training.

I. Personnel.

Any military operation calls for the physically fit. Troops will always face fatigue, hardship, and privation as well as the enemy; and soldiers must therefore develop endurance, initiative, and determination to supplement their courage. With these basic military criteria, can we say that the mountain soldier faces greater hardships, privations and dangers than his fellow fighting on the plains? Yes, we can. The man in the normal type of unit fights in atmospheric conditions to which he has always been accustomed, and although he may fight in all degrees of temperature, the air he breathes will still have approximately twenty-one percent of oxygen. Not so the mountaineer. His air becomes more rarified with in-

creasing altitude, and every physical movement calls for more exertion than is required at sea level. His route of march is up hill and down dale and to cover a given horizontal distance, he marches farther and expends more energy than his comrade far below. Most of his movements are over paths; paved roads and truck rides are a rarity. His body is subjected to wide temperature changes in any twenty-four hour period, changes he must withstand without undue loss of physical efficiency. He operates in small detachments and when he nears physical exhaustion, there is no relief or replacement at hand, as might be the case with a tired truck driver or gunner. If he falls and injures himself the medical attention and evacuation service he receives are less efficient than in the lowlands. His training and knowledge of the mountain has taught him that the success and safety of all are tied up in his ability to drive on. The food he eats, the supplies and sleeping comforts he uses, and the ammunition he fires are carried on his back; and finally he has two adversaries, the enemy and the mountain, and the latter is often the more implacable.

Men meeting the qualifications are not found at random, and selection of personnel for a mountain unit presents definite problems, for we have no ready supply of conditioned mountaineers as is the case in many European countries. The population density in our mountain regions is far less than in corresponding European sections, and the bulk of our mountain units must be developed from men totally unaccustomed to mountain life. Thus, our first personnel problem is in setting up definite physical standards which would reduce the number of physical misfits to an absolute minimum. A unit operating away from its base and in mountainous country loses much of its effectiveness if it must care for those who cannot keep up.

To life in high altitudes there are but two reactions: love and hate for the mountain. There is no middle ground. The latter state of mind is usually caused by fear of the mountain, but proper mental conditioning should reduce this to a minimum.

Before beginning with the selection of the men, we must secure the proper leaders. Men who are physically, mentally, and morally capable of engaging in mountain operations should be the only ones selected. Once selected they should be given special training in all phases of mountain operations and especial means taken to inculcate in them a fanatic love for the mountain so that they in turn can communicate this feeling to their men. Our classification tests should be of use to us in arriving at the selection of personnel. Mountaineering has a few devotees here in the United States, and those now in the army should be used to leaven this new type organization. Their presence will go far in helping the new men adjust themselves.

Our next problem is initial training. Before men can be trained in mountain warfare or even conditioned to it, they must be properly equipped.

II. Equipment.

The question of equipment presents many new problems. The soldier must have personal equipment suited to the work expected of him. Mountain troops must be dressed in clothes that will give them utmost freedom of movement, that will permit them to engage in maximum physical exertions without running the danger of contracting sudden chills when physical efforts cease and they are exposed to the cold mountain air. The usual wool uniform is not well adapted for operations at high altitudes since it absorbs perspiration and becomes clammy. Clammy clothes are a menace at the halt or during rest periods since they promote chills rather than prevent them. Several light garments topped by a light wind-proof are better than a single heavy one for they use air layers between successive garments to retain heat and do not become clammy. Also the use of several layers will permit the men to vary the weight of clothing to meet actual weather conditions. Clothes should fit snugly at the wrists, waist, and throat without constricting circulation. Shoes are one of the most important items of personal equipment, and too great care cannot be given to their proper selection and fitting. Since skiing must be one of the attributes of the mountain soldier, a modified ski boot would be most serviceable under all conditions. Finally a pack must be developed for the mountain soldier. The regular infantry pack, extending all the way down the back and carried by tight fitting straps is unsuitable. Foreign opinion favors the "rucksack" with metal frame. This pack allows a maximum of freedom and the inclusion of a head band makes it possible to carry extra loads with a minimum of fatigue and danger. As a minimum, the soldier must carry arms, ammunition, rations, linen, tentage, sleeping bags, skis and accessories, rope, medical supplies, repair kit, surveying equipment, and axe. With these minimums, the inclusion of items of occasional use will result in weights impossible to carry under mountain conditions. The individual will carry several days' rations and his pack must be designed to allow the rifle to be attached securely and permit complete freedom of hands for skiing, climbing, or other tasks. The weight of the pack for high altitude operations should not exceed forty-five pounds (including rifle).

A final word regarding personal equipment. Any mountain operation will present the problem of cover and concealment in snow. Recent winter operations show white overalls to be an effective means of promoting camouflage. This outer covering can be in the form of white windproof jacket and trousers carried in the regimental train and issued when snow operations appear imminent. This white covering should include a white helmet cover, and we must provide means of painting the rifle and other weapons white. Many pictures of snow troops show white-clad men carrying dark objects which stand out like sore thumbs and destroy all advantages gained by the white dress.

Skis will be part of the basic equipment of the soldier, and each man should have his own pair and be held responsible for their proper upkeep. Any mention of skis raises the question of fastenings. Ski fastenings, like women, are an endless source of argument and this question will never be answered to the satisfaction of all skiers. We might mention that the Swiss have found the Kandahar fastening satisfactory for use in their mountain divisions.

a. Infantry Weapons.—The basic mountain arm is the rifle, and each officer and man will be equipped with it or the new carbine. As mentioned above, the question of painting the rifle white during operations in the snow must be considered. This problem is not easy of solution, for the paint cannot be permanent or harmful to metal.

In addition to the rifle each man will be armed with the bayonet. In mountain combat the hand grenade is a most useful offensive and defensive weapon, and each man should carry some as part of his basic combat equipment. In addition to the rifle and the grenade, units should be equipped with sub-machine guns and explosives.

The question of supporting infantry arms is one requiring considerable study and experiment before we reach satisfactory conclusions. In considering accompanying weapons, let us remember that, frequently, pack transport will not be available and that the only substitute for mule-back is the human back. Under such conditions, an accompanying weapon too heavy for ready carrying on a man's back becomes a liability rather than an asset.

Another problem, particularly in regard to automatic weapons, is ammunition supply. A platoon on patrol will not have any Class V distributing points a short truck haul away; and if it runs out of machine-gun ammunition, there will be no opportunity for re-supply until the unit returns to its base camp. An ammunitionless gun will either be thrown away or carried back as dead weight and general hindrance. Terrain found in the mountains seldom offers the fields of fire required for the optimum operation of our heavy machine gun. Thus, in addition to its heavy weight this machine gun, when used in the mountains, loses one of its prime advantages. We are left with a choice between the light machine gun and the automatic rifle. Only by practical tests can we actually arrive at the proper answer to this question. As a supplementary source of fire support for our units, we can add the mortar. Again we are face to face with the weight-versus-effect equation. The 81-mm mortar weighs one hundred thirty-six pounds complete and breaks down into component loads none of which are less than forty-five pounds. This is too heavy for continued use by foot elements who have to move their weapons themselves. The 60-mm mortar, on the other hand, weighs forty-two pounds and breaks down into three loads the heaviest of which weighs sixteen pounds. The bursting range of the projectile is some 15 yards in contrast to the 25 to 30 yard radius of the 81-mm mortar. The decreased range of the 60-mm is more than offset by the ease of carry.

b. Artillery Weapons.—The question of artillery weapons for mountain units is one requiring a great amount of study from the materiel as well as the technical point of view. The howitzer is best adapted to mountainous terrain, and we must have a piece capable of following and supporting the infantry wherever it goes. Horse and motor-drawn artillery will be limited in their uses by the terrain; and when leaving the valley floor, more and more dependence must be placed on pack artillery.

Artillery will be decentralized in combat and much study will have to be given to the question of observation and liaison between infantry and artillery. The existence of numerous defiles will make interdiction fire more effective, and the difficulty in locating hostile batteries will reduce the number of counterbattery missions.

III. Training.

The initial training task is the mental and physical hardening of all personnel. At the conclusion of the hardening period, our troops must be able to go anywhere and carry on effective combat at destination. This is quite an order. In considering these training problems, let us assume that the men we have received in our unit are not fresh from an induction station but have received training in infantry and artillery replacement centers. Granted this assumption, we are faced with the task of building up their powers to such a point that they know they can lick any range of hills in the world. This twofold mental and physical training task is a heavy responsibility, for the *esprit* of the unit rests largely on the attitude adopted in early training. Men must be shown the grandeur of the mountain and appreciate the kind of foeman it really is. Their pride is brought out in impressing on them, by actual doing, that they are capable of exertions they never dreamed of in earlier training. Individual initiative must be developed to a high degree, and to further this the various training tests can be conducted as competitions. In another section of the *Military Review* will be found a detailed description of field tests used for the individual Swiss soldier. It is difficult to imagine such tests failing to develop intense pride in oneself and one's outfit. Proper march methods are instilled in the troops at the very outset.

Mountain valleys are frequently marshy or heavily wooded and the crest of the ridge is usually very uneven, presenting hard going and good silhouette to any observer. The best route lies somewhere along the slope. An easy grade is selected whenever possible, and the pace is long and unhurried. The whole foot is kept on the ground if possible. At the outset it may appear difficult to walk with the heel on the ground at all times, especially up steep slopes, but practice will soon show the wisdom of this method of walking. As an item of encouragement to the development of personal initiative, the men—marching in single file—take turns leading and breaking trail. This develops confidence among them and heightens the individual's self esteem. Not all marches will be up hill, and early in the training period the men must be indoctrinated with the conviction that descents are more perilous than ascents. The downhill run causes most of the leg, foot, and ankle injuries. If possible, routes should be selected through short grass. Making trail through the long grass, aside from being bad deception, is dangerous because of slipperiness and the presence of hidden rocks which may injure a man seriously enough to require assistance from his comrades if he is to continue. We must remember that the timber line is at 6000 feet and that vegetation is sparse or nonexistent at altitudes above 9000 feet. Training for the mountain begins on the level and gradually works up through the foothills to the actual ranges themselves. By this gradual process men develop the physical control necessary to negotiate any altitude. One secret of successful mountain climbing is rhythmic deep breathing and proper muscular control of the pulmonary apparatus.

Most officers will bear testimony that one of the most difficult problems in march training is the monotony which sets in after a few hours on the road. This tedium is totally lacking on any mountain road march, for the men never know what lies beyond the next ridge and are constantly faced with something new. Consequently, they forget the monotony of marching and at the conclusion of the exercise are quite unaware of the extent of their exertions. This

factor not only makes march training easier but also has an important part in building up the pride of the individual in his physical prowess. This progressive training mentally conditions the soldier for his future tasks. By gradual absorption into the mountain, he has little cause to develop that fear which is present in so many people who, without previous conditioning, have been exposed to sudden mountain hazards. As a result of this preliminary hardening we should be able to develop men thoroughly convinced they have all the physical requisites to march with a full pack and negotiate steep mountain trails for stretches of twelve or more hours a day. In any mountain march, rest periods must be at definite intervals. However, the commander must never allow his men to halt in non-sheltered places. Such habits are bad from physical as well as from tactical standpoints, and no one should be permitted to neglect the protection furnished by nature. To estimate mountain distances correctly is not easy, and we find most mountaineers using time to measure distance. To know that two ridges are separated by a distance of ten miles is of little help in getting a satisfactory answer to the time equation. More frequently than not we will find ourselves estimating distance in terms of hours and minutes.

Mass discipline and subsistence must be important items of our training program. It may be a novel idea that the American soldier requires training in mess hall tactics, but subsistence in the high altitudes presents problems not found elsewhere. As mentioned previously, the mountain soldier must carry all his needs on his back. If he is to carry rations in addition to his other equipment and if these rations are to be in quantity sufficient to nourish him for several days, they they must be selected with an eye to maximum nourishment for a minimum of weight. Physical condition is directly proportional to nourishment received, and in view of the strenuous exertions called for, we must provide our men with the best obtainable. Now the best nourishment may not be the most palatable, especially to troops who have been living on our field rations; and they must be taught the nutritive values of the food they carry and, surprisingly enough, must be instructed in the proper way to eat it. The digestive apparatus slows down at high altitudes; and to counteract this, meals will be more frequent than the usual three a day. The number of meals will be prescribed by the commander, and inflexible mess discipline must prevail. Meals are to be eaten only when ordered. Each man carries his own food, and any small snacks at hourly rests are prohibited. The men are carrying the minimum of food for their operations; and none can be consumed in satisfying a small hunger pang which may, after the snack, develop into a serious cramp and cause difficulties for all. We have all seen men on maneuver with their cold lunches. How many units arrive at the noon rest with all lunches intact? Such procedure is most dangerous in the mountains where every ounce of unnecessary food has been eliminated.

The Foreign Military Digests Section of the *Military Review* contains an article by Captain Zimmerman of the Swiss Army giving the results of exhaustive ration experiments carried out in the Swiss Army. Briefly summarized, hard rye bread is substituted for white; smoked or dried meats take the place of fresh. Oatmeal and rice are staple items with honey, raisins, and jam included to add to the taste. Chocolate has been entirely eliminated, and in its place we find a concentrated Ovomaltine. Dried fruits with an occasional fresh lemon form the fruit component. Beverages are tea, malt preparations, and coffee. Alcohol in any form is out. As a matter of fact the question of the use of alcohol and tobacco presents a serious problem to any training program, as it is desirable to eliminate their use among the troops.

IV—Tactics

Terrain is a primary influence on tactics, and any difference between mountain and lesser altitude tactics is due to changes in terrain and not to any deviation from the fundamental principles governing combat as embodied in our service doctrines. Before making a brief examination of some of the problems of mountain tactics, let us look at some of the terrain characteristics we may expect to meet in the higher altitudes. The terrain is studded with strong natural obstacles consisting of steep ridges, deep ravines, and fast flowing streams. These cut the terrain up into numerous corridors of varying degrees of passability. Soil is shallow and hard to work and results in limited natural resources and shelter. Climate is most erratic and subject to sudden changes with high winds, frost, and snow to be expected without warning. Finally, the communication network will be poor, especially between corridors. These general characteristics will become more pronounced as we reach the higher levels. Our brief tactical discussion will include some of the problems of reconnaissance, attack, and defense.

a. Reconnaissance.—Mountain warfare involves extensive and difficult terrain in which limited numbers of troops can operate. Under such conditions, isolation or overextension will be the usual lot of the mountain soldier. With this the case, reconnaissance is of the maximum importance. Any high altitude reconnaissance will be difficult. Compartmentalization of terrain exists to the highest degree, and we cannot expect to be blessed with excellent observation. Despite superior vantage points, cover and defilade will aid the enemy in screening his activities, and we must also contend with the frequent mountain fogs which make our reconnaissance problem all the more difficult. Valley roads are frequently screened from the observer by trees. Critical points may, at times, be reconnoitered by motor vehicle; but in the majority of cases, we must expect the terrain to deny us this means for rapid reconnaissance. Air patrols will have less effectiveness in the mountains than in the lowland. The many shadows cast by the valley walls make visual observation and photography difficult; and in addition to this, the aviator must contend with the vagaries of the air currents. Our reconnaissance means will be limited to small foot or mounted patrols. These units must be of sufficient strength to engage in combat whenever that is necessary for the successful execution of their mission.

The strength of the patrol depends on the character of the mission. Its composition will vary from the squad to the reinforced company. The distance it operates from the main body will vary from a few hours' march to several days. The factor governing these distances is the efficiency of communication between higher headquarters and the reconnaissance elements. Radio can be unreliable in the high mountains and wire is, of course, out of the question.

Therefore, the high command must decide the time element required to receive information, and the distance the unit operates from the main body is governed by this decision. The irregular terrain, while increasing the difficulties of the detachment also offers it excellent opportunities for the display of initiative. In addition to the securing of initiative, mountain reconnaissance detachments often strike sudden blows at the enemy and frequently succeed in influencing action by the sudden seizure of some key point. An added difficulty of the reconnaissance detachment is the lack or uselessness of existing maps. In most combat zones we are fully prepared to work with inferior maps, but inferior as the maps may be for the lower altitudes, they will be masterpieces of accuracy when compared with the map the mountain commander has at his disposal. This lack of maps makes it imperative for the mountain soldier to draw accurate sketches. To this end, all training must include a thorough course in map reading as a preliminary to map sketching, and the more advanced individual tests should have a sketch problem included as an important part of the test. With regard to sketching, the greatest difficulty in teaching accurate sketching methods will be in having the men estimate a distance. Practice will help, but commanders will find that it is the most difficult of things to learn.

b. Marches.—Any consideration of mountainous terrain tells us that troop movements will be governed by different rules than in the plains. Wide paved highways will not exist and we cannot expect to move our units three abreast up some mountain trail. The usual formation will be single file. Under such conditions an infantry rifle company will occupy some 500 yards of good cowpath. These road spaces will be increased by difficulty of terrain, and we can readily appreciate that our time and space problem will differ vastly from that of a normal infantry unit. The first partial solution to this problem is the use of a multiplicity of paths. Of course, such a division increases control and liaison problems; but if units are to move at all, they must move over different routes. Rates of march will differ greatly. We have a rule of thumb of two and a half miles an hour for foot troops. Horizontal distances give little indication of time or effort required. To supplement the time required for horizontal travel, add an hour for each 1000 feet of ascent or 2000 feet of descent. Since the terrain and the lack of road-net force us to multiplicity of routes, it stands to reason that each unit must be tactically complete.

On the march, rigid march discipline must prevail. The column is kept closed up to conform with the terrain. Different men take turns leading, and all are encouraged to save conversation for the rest period. Ten minute rests will be given each hour, but these are usually increased at higher altitudes. As part of training, men must be impressed with the latent dangers associated with drinking water from streams. They must be educated to regard any water as dangerous unless specifically told otherwise. Many babbling brooks and mountain streams are deceptive, and troops must refrain from using them. Men should refrain from using their canteens except at meals. Distant observation by the enemy calls for special security measures. The threat of ambush must always be uppermost in the commander's mind. Tactical groups usually will march in terrain corridors separated by obstacles depriving them of mutual support. All-around security is equally applicable in mountains and on the plains. To further security, the advance guard and main bodies may move by bounds from one dominating point to the other. Flank security units have the hardest job on the march, and their relief at regular intervals will be provided. Successful movements in mountainous country depend on training. The time to start a march depends on the terrain ahead. If snow fields lie ahead, try to pass them before the sun loosens them. Avalanches usually fall between 10:00 AM and 4:00 PM. If a descent is being made from the higher levels to a hot valley, make the rest period long to accustom the men to the valley conditions before they actually get to them.

c. The Offensive.—The goal of a mountain offensive is to secure corridors and permit other forces to pass *through* and engage the enemy in decisive combat. The terrain with its steep slopes, natural obstacles, and poor communications network will reduce the tempo of operations below that which is normal on the plains. The soldier finds movement uphill under fire very slow, and the character of the soil is such as to make digging-in most difficult. Also, the defender uses the strong natural obstacles, has better observation, and an ammunition supply system which functions more smoothly than the attacker's.

The strength of terrain compartments differs radically, and aggressive action may be possible in one and most difficult in the adjacent one. Distribution of forces will be very uneven, and the "tactical saturation" of each avenue through the mass must be estimated and the distribution of forces based accordingly. Any distribution of force amid poor communications forces decentralization of command.

Unwise as it is in any situation to change plans and dispositions after commitment to action, such a procedure is impossible in mountainous country. The lack, or extreme difficulty, of lateral communications makes it most difficult to change initial dispositions by bringing troops or reserves from adjacent corridors. This inflexibility of action must not be overlooked when considering mountain operations. Objectives will frequently be terrain features such as passes, crests, observation points, or crossroads; and their location in regard to the attacker and the terrain will usually be such as to demand frontal attack rather than enveloping maneuvers. Tactical groups will fight under the almost complete discretion of their own commanders.

Exploitation of success must be bold and have as its primary purpose the deepening of the salient rather than the widening of the breech. In exploitation, the natural boundaries of the corridor will often be of greater assistance to the attacker than to the defender, for they can well hinder the latter from bringing in reserves from adjoining corridors. A rapid and effective deepening of the breech may completely bar reserves from influencing the action. Exploitation in depth rather than in width will reach its most effective stage when it succeeds in reaching and blocking enemy lines of communication.

Offensive actions in the mountains require well trained troops capable of great physical exertions and able to operate effectively in small units. Again we have a premium for initiative, for one weapon always available to the attacker is surprise. Surprise is facilitated by the existence of exceptional dead space and defilade and these will frequently permit a debouchment a short distance from the enemy. Small detachments passing through areas difficult to travel

in order to operate against hostile flank and rear installations provides another form of surprise. In this connection we can point to the possible use of air-borne and air-landing troops.

d. The Defensive.—Mountain terrain is more exacting than the lowlands regarding the effective depth of defensive positions. Defilade and dead spaces increase with altitude, and a mountain defender must make an exhaustive terrain study to limit the advantages the enemy can derive from existing defilade and dead spaces. Dispositions will be governed by the mission and the avenues of hostile approach, with the defense seeking to control the heights dominating these avenues and to retain possession of the defiles in the area. To reach the battle position should require the enemy to execute a long and arduous climb under fire from all weapons of the defense. This expenditure of physical energy should reduce the "aggressive potential" of the attacker and make any sustained drive difficult. Aggressiveness is the keynote of our defensive doctrine; and the counterattack of reserves will be most effective when it is launched against an enemy who, because of the physical exertions required to reach the position, finds himself unable to follow up an initial success without allowing time for rest and reorganization.

The limited mountain road-net imposes considerable rigidity on the defender; and, like the attacker, he will have little opportunity to alter his dispositions once combat is joined.

Another aspect of mountain defense is in the excellent opportunities offered for ambuscades. These and a complete system of defended road blocks will greatly assist the defender's covering forces in achieving maximum delay, deception, and disorganization of the enemy. Reserves will be located in regard to the communications network, and they will be located on or near practicable roads of axial and lateral communication.

Several Lessons from Experiences in Attacking Villages

By

Major General V. Gordov, *Russian Army.*

The war during the last few months has consisted chiefly of attacking small villages, and the analysis of enemy tactics indicates that the Germans form an all around defense at such villages, strongly reinforced with automatic weapons.

Normally, the Germans do not occupy the whole village; small detachments are disposed at important places. They make use of stone dwellings from which heavy machine gun and antitank fire can be delivered down the streets; tank mines are placed across likely approaches. On the edges of villages are automatic weapons; dugouts and defense works are constructed on the important approaches. Communication trenches are dug between fire points, even up to the houses. At night the Germans set up fire outposts to cover the approaches as well as to reduce losses from artillery fire.

The garrison of a village is normally a company or battalion, reinforced by some artillery and a platoon of tanks. The latter are used as stationary fire points in the village and for counter attacks against infantry.

The Red Army has gained considerable experience in attacking a village. One method is the blockade and there are two points of view in executing this. One is to effect the blockade with a strong force and the other is to go around the village, leaving a small force for observation and retaining force.

To use strong forces is to deprive the leading echelon of needed strength, or its reserve. To leave a small force is unwise since the Germans might attack and create havoc in the rear of our troops. The latter situation once took place and it was necessary for us to bring up additional troops to localize the danger. This caused a three-day delay before the second echelon could proceed and support the first. It shows what care must be taken in blockading a village during a general attack.

The following represents the best method in taking a village:

A most careful reconnaissance must be made. This reconnaissance must determine the following: (1) nature of terrain, (2) combat formation to be used, (3) scheme of fire used by the enemy, (4) location of his fire positions, (5) the best use of our own artillery and mortar fire in the beginning as well as during the progress of the attack and (6) missions to be assigned.

The most effective formation is in three (3) echelons. The first is the assault echelon (platoon or company) reinforced with a pioneer detachment, and armed with grenades, flame throwers, bottles containing gasoline and explosives for blowing up defensive works.

The mission of the assault echelon is to seize the edge of the village and break up the enemy scheme of fire. During a short but strong artillery support and accompanied by tanks it moves to the line of departure. As soon as the artillery has lifted, the echelon charges the first buildings, penetrating to other fire points, using all means at its disposal to reduce the resistance, trying to reach the opposite side of the village.

The second echelon (a reinforced company or battalion) develops the success of the first echelon and breaks up the enemy coordinated defense. It follows in close proximity and, after the edges of the village have been taken, extends itself covering the other buildings and prepares the way for the main group. It also prevents the enemy from using its reserves.

The third echelon is the one which actually cleans up the village. It has the greatest fire power, having with it fifty per cent (50%) of the artillery. This echelon destroys the remaining points of resistance and organizes the village for defense.

Success in such an attack depends upon the closest coordination and coopoeration between the infantry and supporting units. The tanks, accompanying the infantry from the line of departure up to the village, destroy opposition and seize the routes of probable approach by German reserves. The artillery and mortars pound the enemy artillery and fire positions, support the first echelon and cover the flanks of the second.

Direct sighting of artillery is of utmost importance. The dugouts sometimes resist even a 122-mm. howitzer shell. Direct sighting and accurate firing are necessary to destroy enemy dugouts.

Attack and bombing planes strike the edge of the village before the attack and later assist in reducing stubborn points of resistance as well as watching for approach of German reserves. Pioneer detachments make a careful reconnaissance of the terrain and remove mines. They prepare the buildings formerly occupied by the enemy for defense of our own units.

The attack on a village is best effected from three directions, leaving the fourth open for the withdrawal of the enemy, where they can be destroyed. It is best to have mobile units for this latter mission.

To organize an attack the commander must make careful preparations, guaranteeing coordination between the echelon and the fire support. In choosing the place for the main effort it must be done without the enemy's knowledge so that he does not move up reserves to meet it.

It is sometimes best to attack a village at night. Night action requires first, surprise, and second, self control and determination on the part of the soldiers. For night operations there must be a limited objective, with careful coordination between units and proper orientation. The subordinate units must be easily controlled and every commander must be with his unit. Only then is it possible to meet unexpected situations in time.

In night operations considerable reliance must be placed on grenades, pistols and bayonets. The artillery and mortars must always be ready to open fire on pre-determined targets. The use of tanks is not recommended because the noise of tanks removes the element of surprise.

The night attack against a village can be accomplished only from two sides, to prevent firing into our own troops. The attacker must use the flares thrown out by the enemy to orient himself. It is best to attack at night on a wide front being careful to insure contact between neighboring units and to provide protection for the flanks which are so vulnerable at night.

Careful preparations, efficient control during combat, excellent security for the troops—these are the conditions which insure success for the attacker.

—From *Krasnaya Zvezda*

The science of modern total war must move steadily towards the goal of flexibility and adaptability and away from the rigidity and formalism that has been the great curse of the military profession in the past.

—Lowell M. Pumphrey, "Economic Warfare Tactics" in *Military Affairs.*

The Soviet Antitank Rifle

By

Lieutenant General F. Kostenko, *Russian Army*

During a comparatively short period Soviet antitank rifles have proved themselves a powerful weapon against enemy tanks. On one sector of the front alone 25 German tanks were destroyed within two weeks by antitank guns.

The Soviet government rewards every soldier who succeeds in disabling an enemy tank.

The antitank gun can be taken any place that is accessible to the infantryman. Weighing little the gun possesses great armor penetration qualities. It is most effective when fired from a distance of 150-200 meters. At this distance the projectile fired from this gun pierces the armor of a medium or light tank. Best results are obtained when the rifleman fires at the tank from the side and he should so place himself as to be able to hit the tank precisely in this manner.

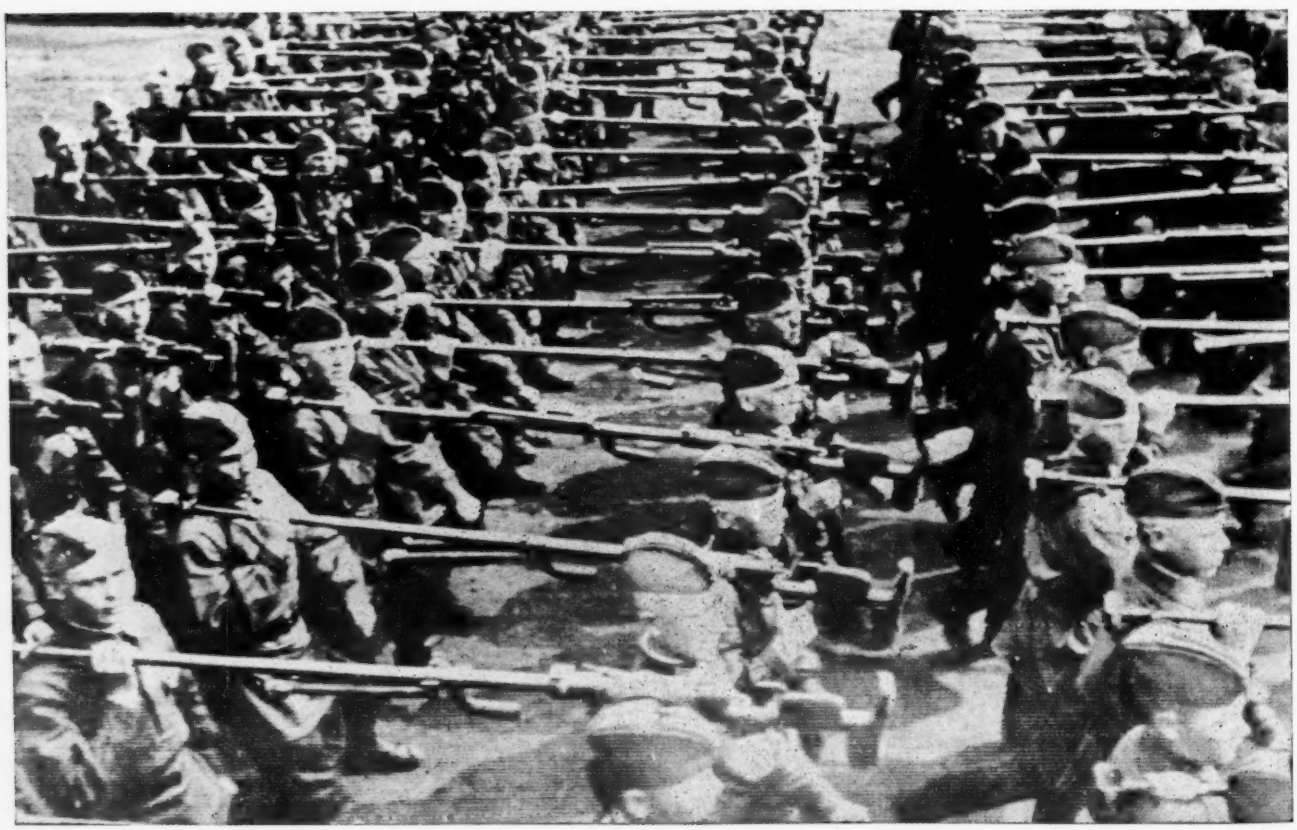
Every German tank has vulnerable spots and it is at these that fire should be aimed. It is the antitank rifleman's duty to know these vulnerable spots thoroughly.

The firing position for the antitank rifle should be selected in irregularities of the terrain. Shell holes, ditches, houses, barns, provide good cover against observation and enemy fire. The firing position should afford an all-around field of fire of not less than 150-200 meters. When the advance is halted, or when the defensive must be assumed, a trench should be dug.

The antitank rifleman should have alert vision and should constantly observe the enemy and own infantry, especially in the main defensive sector, in order not to miss the appearance of an enemy tank. The commander should indicate to the personnel of each antitank rifle the principal and auxiliary fields of fire and observation. The gun pointer and his assistant conduct observation. If visibility from the position to one of the observed sectors is bad, it is necessary to select an OP nearby (not more than 15-20 meters from the guns). In this case the assistant gun pointer conducts observation.

Experience shows that antitank rifles should not be distributed equally along the entire front. This unalterably causes the weakening of their fire power. The enemy will concentrate tanks not along the entire front but in separate places only and when this happens it will be too late to call for weapons which are dispersed along the whole front line. Antitank guns should be concentrated wherever our infantry units are engaged in main action, i.e. in the direction whence enemy tanks will most frequently make their appearance.

When engaged in combat, the antitank gun section is



Sovfoto

Soviet Tank-Destroyer Group With Antitank Rifle

disposed in its firing position with the section commander's OP nearby. The section commander should know every principal and auxiliary field of fire and observation. The rifles should be so distributed as to assure:

(a) observation of every field of fire;

(b) simultaneous fire of several rifles against the same target;

(c) fire cooperation of all the rifles;

(d) precise fire control during combat.

The firing position of the section should be so organized as to prevent the enemy from hitting all the rifles with one shell or mine. Therefore, the intervals between the individual riflemen should not be less than 100-150 meters. The section commander should select his OP in such a place where he is able to oversee his entire sector.

Firing positions and OP should not be selected near positions which stand out sharply. This will help the enemy reconnaissance and fire. Own fox hole, gun and body should be concealed from the enemy. The moving enemy tank is visible but it should be unable to see anything. As the tank approaches it should be hit in vulnerable spots.

What is the place of the antitank rifle during the several stages of offensive combat?

During the period of overcoming the zone of approach the antitank rifle personnel proceed with the vanguard unit and are in action against enemy tanks and armored combat cars which usually are in ambush. In some instances antitank rifles accompany groups engaged in reconnaissance of the flank, junction point or in front of their unit. Whenever necessary, antitank rifle personnel advances with the obstacle clearing detachment.

During the period of reconnaissance of the enemy outer line of resistance, when main forces are in jumping off position, the antitank rifles provide cover for our units against possible enemy counterattacks. In these, as in all other cases, places most accessible to tanks should be covered.

When our infantry goes into attack against the enemy outer line of resistance, the antitank rifle should proceed shoulder to shoulder with it. When tanks are discovered, fire is opened against the visual slits in the turrets. Directly after the break of the enemy outer line is accomplished, a part of the antitank rifles should be sent to the rear. These may be useful for repelling a possible breakthrough by enemy tanks.

During combat in the defensive rear the principal mission of antitank rifles is against counterattacking tanks and tanks firing from ambush. During pursuit a part of the antitank rifles may be included in the pursuing units. All other rifles will protect our infantry columns from enemy tanks.

In defensive action the antitank rifles are most important. Their mission is to destroy enemy tanks in the approaches to our outer defensive line and to prevent them from breaking through into the defensive rear. Should individual tanks succeed in breaking through, they should be met by powerful fire. Therefore, it is necessary to echelon antitank rifles in depth.

Antitank rifles placed on the outer line of resistance open fire the very moment the enemy tanks enter the obstacle zone. The obstacles slow the tank down and this moment, when the tank is busy in trying to clear the obstacle, should be fully utilized. When the tank passes through the firing position of the antitank rifle, the gunner should conceal himself and his weapon in the fox hole, where he cannot be reached by the tank. As soon as the tank passes, fire is opened against it without delay.

The antitank rifleman is an important factor at the front. Being a sniper, a super-accurate rifleman, he is able to hit any enemy tank or armored vehicle with one or two shots. He must possess exceptional willpower, steadiness, firmness and *sang-froid.*

Without its tanks German infantry is weak. By destroying his tanks, the main source of his strength is destroyed.

—From *Krasnaya Zvezda*

The Second World War

[This survey covers reports up to 10 June 1942—Editor]

Introduction

During the time since the April *MILITARY REVIEW* went to press, there have been important developments on most of the fronts on land and sea and in the air. Among them are the following: (1) the fall of Bataan and, later, Corregidor and the other island fortresses at Manila Bay; (2) a successful American bombing raid on military objectives in Tokyo and other Japanese industrial cities; (3) American-Australian raids on Japanese positions in the islands north of Australia; (4) the battle in the Coral Sea which forestalled for a time an attempted large-scale invasion of Australia; (5) American troops landed on the Free French island of New Caledonia; (6) new and important Japanese offensives in eastern China; (7) Japan's conquest of Burma and penetration of the Yunnan province in south China; (8) Japanese occupation of the Andaman and Nicobar Islands and considerable air-naval warfare in the Bay of Bengal; (9) Japanese raids on the island of Ceylon and coastal Indian cities; (10) British occupation of the French island of Madagascar off the east coast of Africa; (11) the renewal of warfare in the Libyan desert; (12) increased operations on the Russian front which resulted in the Axis conquest of the Kerch Peninsula, Russian actions thus far preventing a German thrust in the Ukraine; (13) increasing unrest in the occupied countries of Europe; (14) Pierre Laval's return to power in France, Italy's renewed demands for French territory, and the imminence of a turnover of the French fleet to Hitler; (15) the heaviest raids in all aerial warfare dealt by the R.A.F. in deadly blows on the German Rhineland, destroying substantial portions of the industrial cities of Cologne and Essen first and, a short time later, the cities of Emden in Germany and Bruges in Belgium, as well as raids on the industrial centers of occupied France; (16) arrival of a third and large contingent of American troops in Ulster, and other activity preliminary to a thorough United Nations offensive in western Europe; (17) the continued depredations of Axis submarines in the western Atlantic where an increasing number of United Nations and neutral merchant ships continue to be sunk; (18) Japanese bombing raids on United States bases in Alaska; (19) the declaration of war on the Axis countries by Mexico, and our declaration of war against Rumania, Bulgaria, and Hungary; (20) negotiations directly with the island government of Martinique concerning the French vessels there; (21) increasing production of war materials and supplies by the United States and shipment thereof to our Allies and our own bases throughout the world; and (22) the decisive defeat of a Japanese invasion fleet which was headed for the island of Midway in the Pacific but which was intercepted by units of the United States Navy and forced to flee after heavy losses in ships, planes, and men.

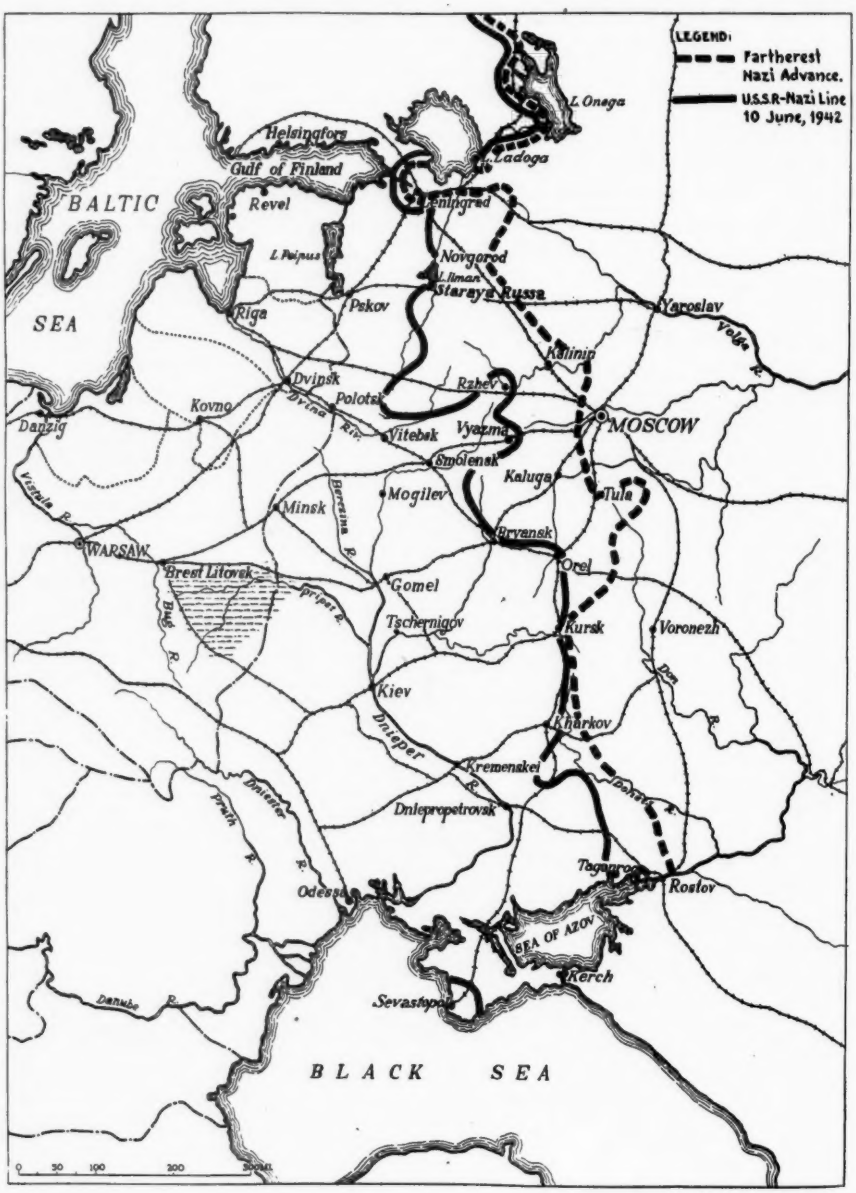
The War in Europe

Western Europe.—On 28 March, British commandos, sailors, and airmen raided St. Nazaire, France, in the largest of such raids to date; and on the same night the R.A.F. heavily bombed Germany's important Baltic seaport of Luebeck in a raid which one Berlin correspondent described as "the heaviest attack of its kind yet undertaken in the present war." These two raids typify the war activity on the Western Front during the past three months. In the attack on St. Nazaire, a former United States destroyer was loaded with tons of explosives and rammed into the main dock of the Nazi U-boat base from which submarines were believed to have been attacking allied ships as far west as the United States coast. Commando soldiers blew up the pumping station and the dock operating gear. Similar commando raids, of a less spectacular nature, have been made at various points along the coast of occupied France and have been productive means for obtaining information.

On the night of 30 May, in the greatest raid in all aerial warfare, 1,250 R.A.F. planes dropped nearly 3,000 tons of bombs on the Rhineland metropolis of Cologne which is about 300 miles southeast of London. Much ruin was accomplished. Casualties were high, and evacuation from Cologne and other cities in the Rhineland began almost immediately following the raids. Two nights later more than 1,000 R.A.F. planes turned their bombs loose on Germany, most of them on Essen (north of Cologne), site of the huge Krupp munitions works.

German retaliation was in the form of attacks on the old English cities of Canterbury and Ipswich in southeast England. Previously, in return for heavy raids on Rostok beginning 23 April, the Nazis made "Baedeker" raids against nonmilitary objectives, three cathedral towns and an architectural monument: Exeter, Bath, Norwich, and York.

There are increasing indications of and statements concerning American forces joining in air and land warfare in western Europe in the not distant future. In mid-



April, General George C. Marshall, who with aides went to London for conferences, said that American troops "inevitably will join the commandos." Already, American troops had landed in Ulster (northern Ireland) and in England. Since then a third sizeable contingent of American forces—"thousands and thousands of them," so British papers stated—arrived safely in Ireland after fighting off attacking submarines. In late May, high-ranking army and navy officers conferred in London and were present at the time of the gigantic raid on Cologne. Lieutenant General Henry H. Arnold, Commanding General of our AAF, said this raid had "hastened the day when our air arm shall join against the enemy in the air offensive which he cannot meet, defeat, or survive." Again, a few days later General Marshall said bluntly that American troops had landed in many places throughout the world, "and they will land in France."

Among the unfortunate events occurring in France is that in April the detested Pierre Laval was thrust back into power by Hitler and became Chief of Government in Vichy. Whether or not Laval will be able to get sufficient support to effect complete collaboration, as he desires and as is desired of him, remains to be seen. Italy has renewed demands for French territory—Nice, Corsica and Savoia—and Hitler is giving some recognition to such demands, perhaps as pressure in order to gain complete control of the French fleet. Already, it is reported, Laval has consented to the training of German seamen at French naval bases so they may become familiar with the characteristics of French warships.

In Czechoslovakia, Reinhard Heydrich, hated assistant head of the Gestapo who has been named "the Hangman" by Europe's subject peoples, was fired on by Bohemian assassins on 27 May and a week later died of his wounds. Over 200 Czechs, men, women, and children, were executed in reprisal; and in addition, the whole town of Lidice, near which the shooting occurred, has been completely stamped out by Nazi vengeance squads. The men, mostly miners, were all shot, the women were sent to concentration camps, and the children have been removed to educational centers, the German Prague radio announced. All buildings in Lidice were razed, and the name of the town has been officially stricken from the records.

Elsewhere in Europe there is great unrest. American newspapermen returning to the United States from internment in Italy and Germany since the war began said on their arrival 1 June that there is great war weariness in Italy—but no chance to do much about it—and that there is increasing hardship in Germany—but no sign of a crackup.

The Russian Front.—Although the Russians continued to score successes along various parts of the extensive front, by late March the Soviets had regained but a small percentage of the territory taken in the Axis offensive from June to November 1941.

Throughout March and April the Russians retained the initiative, however, and Hitler had to explain his failure to annihilate the Soviet Army, at the same time promising the launching of a spring offensive which did not materialize.

In the north, the Russians made a strong drive against the Finnish Army in order to free the Murmansk-Leningrad railway between Lakes Ladoga and Onega. The results of this action have not been definitely reported.

Actions elsewhere along the front were local in character, and the Nazis continued to hold the key cities of Staraya Russa south of Leningrad; Rzhev and Vyazma west of Moscow; Orel, Kursk, and Kharkov farther south; and Taganrog, key position on the Sea of Azov along the route to the Nazi-coveted Caucasus.

About 8 May a German offensive began in the Ukraine. For a few days the action lapsed somewhat; then Hitler on 12 May hurled powerful forces at the Kerch Peninsula defenses, the city of Kerch eventually falling.

Meanwhile, Marshal Timoshenko had renewed his offensive against Kharkov along a 120 mile front in what looked like a drive to capture this besieged city. German and Rumanian forces attacked the Russian left flank about 80 miles southeast of Kharkov. For about three weeks the battle waged. Result: heavy losses in men and materiel on both sides. The Russians report that their offensive achieved its aim—preventing Hitler from launching an offensive at Rostov (gateway to the Caucasus oil fields) which the Germans captured last fall but could not hold.

Increasing supplies, including planes and guns, have been reaching Russia, and the Soviets claim air superiority on the eastern front. However, all spring, Axis submarines and planes have been intent on sinking convoys along the northern route to the port of Murmansk.

Russian reports continue to emphasize guerrilla actions behind the German lines, indicating their importance.

Actions in the Mediterranean

The war in the Mediterranean during the last three months has been of intermittent and small scale nature. About the middle of March, London sources reported an attack by the Royal Navy on the island of Rhodes just off the Turkish coast. The amount of damage done by the British was not made known, the English reporting, however, that they sustained no damage to themselves. On 23 March, London announced another foray, this time against Italian naval units. In the fight, the British state that they sank eleven vessels which included submarines, supply ships, and a troop transport. The day after, an Italian battleship was reported severely damaged in a running fight near Malta.

During the week ending 11 April, Malta suffered the heaviest of more than 2000 raids since the war began, and the principal city of Valetta was reported leveled. The bombings have continued almost daily but without decisive effect being gained. Fighter defense on the island was augmented by early May with American pilots and planes and Axis casualties began to increase, one hundred twenty-eight of their planes being downed in the period 7-11 May. Between 11 and 15 May, the German air offensive on Malta was resumed with greater violence than in earlier raids, but reports so far have failed to indicate that the Axis is any nearer a decision than before.

Early in May the announcement was made of an air clash between Vichy-French and British planes near Gibraltar. While nothing more than a local action, it is significant to show the state of tension between the armed forces of these two countries.

On 12 May it was announced that German Naval Staff officers had arrived at the French Mediterranean naval base of Toulon. This fact was noted at once by the United Nations; for should Vichy and Laval turn the French fleet over to the Axis, the favorable naval balance held by the Allies would be greatly reduced. Britain's position in the Mediterranean would immediately become extremely perilous if such an action were to take place. The French people and the naval personnel have threatened revolt and sabotage if Laval should turn over the fleet to the Axis.

The North African Theater

The front in North Africa entered a period of comparative quiet in late February. It was not until the last week in March that action was noted and then only for a couple of days as British units opened up to test enemy forces. They reported that as a result of the skirmishes they felt fully able to cope with any Axis group in Libya

In the first week of April, an Axis force estimated at 125,000 and including tanks, planes, motorized units, and infantry moved eastward toward British positions. The British labeled this move "a reconnaissance in force," and since that time their judgment seems to have been proved correct. The Axis forces seem to have gained advantages of organization and position extending from the coast of Tmini between Derna and Tobruk to a point some 50 miles southward.

On the evening of 26 May, General Rommel launched the German Afrika Korps in attack, and Libya's sixth campaign of the war was begun. With Tobruk the apparent objective, the main German forces swept around Bir Hacheim (50 miles southwest of Tobruk) held by Free French forces at the south end of the main allied line. Then, when the R.A.F. and British mobile units struck at their supply column, the Axis forces attempted to withdraw eastward through gaps in British mine fields. Prime Minister Churchill on 2 June said that a conservative estimate of German tank losses to date was 260 and acknowledged that British losses too were heavy. Mr. Churchill was confident that General Rommel's plans for offensive had "gone completely awry." However, Axis forces reorganized and renewed or attempted to renew their attacks. As this article is written, the fight is still going on fifteen or twenty miles south of Tobruk with half the forces of General Rommel reportedly wiped out.

The Middle East

In March, reports came from London that the first contingent of United States troops had arrived in the Middle East. The detachment was said to number several thousand.

Continued air and naval movements in the eastern Mediterranean and increased troop movement by the Axis in Bulgaria indicated as early as 15 March the possibility of an attack in this theater, although the exact point where the attack might come was not known. The shifting of German high ranking officers to the various fields after Hitler had fumbled the war-handling during the winter gave reason for added concern in this area. Marshal Rundstedt was assigned to the Balkans area, Marshal von Brauchitsch went to supervise new troop concentrations there and in Crete, and Marshal Rommel returned to Libya from Berlin.

The best opinions available seemed to indicate that all this pointed to a move toward the Middle East, perhaps around Turkey through southern Russia and through the Mediterranean. It will be remembered that a year ago an Axis pincers thrust at the Near and Middle East seemed likely but got no further than Crete and the Greek Peninsula in the north and the Egyptian frontier in the south.

By April, the threat was evident again, and among other moves the United States made American armed force apparent in this section. Planes and tanks were sent to Libya; military roads were being constructed in the Sudan; troop bases were being constructed at the southern end of the Red Sea; on the Persian Gulf, docks and port facilities were being built; and a new supply route to Russia via Iran had been developed far ahead of schedule.

With the tension mounting because of Axis preparation which threatened her, Turkey was host to Franz von Papen, Nazi ambassador, in early April. London sources said he had proposed a new friendship pact, very probably of a more generous nature than those offered to the Nazi-conquered nations of Europe.

The Far East

In the Far Eastern theater, Japan during the past three months has scored successes in conquering Burma and considerable territory in East China, in breaking down American-Filipino resistance in the Philippines, and in sinking a considerable number of United Nations merchant and fighting ships; but she suffered defeat in the battle of the Coral Sea, was subjected to a successful bombing raid at home, has been temporarily halted in her southward drive in the direction of Australia, and has suffered large ship and plane losses in central Pacific battles.

Burma-China-India.—In the first three months of the war, Japan gained control of lower Burma. From Rangoon the Japanese by mid-March had moved slowly northward toward Toungoo on the Sittang River and toward Prome on the Irrawaddy. Chinese forces held the left (east) and British forces the right (west) wing of a general line extending from south China through Toungoo to Tharrawaddy.

As Japanese troops were reinforced on land and supported by increased air power, the British-Chinese forces were pushed back. American Volunteer Group fliers gave the United Nations forces what air support they could, which was not enough. Chinese forces, surrounded at Toungoo, were compelled to break the encirclement and join their main body of Chinese troops to the north. British counterattacks in early April, at first successful, could not be sustained, and Prome had to be surrendered. Burmese joined the Japanese drive up the Irrawaddy River, forcing the British to retreat after destroying oil and cement installations south of Mandalay.

My mid-May the Japanese had captured what remained of Mandalay after their indiscriminate bombing of that city and Lashio at the south end of the Burma Road. From Lashio they made rapid advances into Yunnan Province in south China. By this time the Japanese had captured Bhamo some 170 miles northeast of Mandalay and Myitkina 250 miles north of Mandalay. Remnants of Lieutenant General Joseph W. Stilwell's Chinese Army continued resistance in the Mandalay-Lashio region. Soon the battle for Burma was over, the remnants of the British Imperials and a few Chinese troops, who had been in the northwest sector, having been evacuated to India. Of this lost struggle General Stilwell commented tersely from New Delhi, India, "We got a hell of a beating." By 1 June the fighting in this sector was on a minor scale west of the Salween River and along the Burma Road in Yunnan, China.

In late May the Japanese began offensives in eastern China which are, apparently, aimed at knocking China out of the war, whatever the cost, and preventing the United Nations from using China as bases for offensive operations against Japan.

In the Chekiang province on China's southeast coast between Shanghai and Hong Kong (both of which were previously occupied by the Japanese) the battle line formed along a 200-mile front as the Japanese pressed forward with some 80,000 troops toward the allied base of Kinhwa, provincial capital of Chekiang, which city fell to the Japanese on 28 May. By 2 June other Japanese columns backed by a force of about 30,000 thrust southward to positions below Nanchang (250 miles west of Kinhwa) and in western Chekiang were threatening the rear of Chinese defenders who were pushed back to within ten miles of Chusien some 50 miles west of Kinhwa. Thus the loss of the entire Hangchow-Nanchang railway territory became imminent in early June.

Also in late May, Japanese transports appeared in the Min river below Foochow (in Fukien Province to the south of and adjoining Chekiang) and landed troops. Another drive was begun 31 May in Kwangtung Province northward from Canton.

Allied aid to China became an even more difficult problem when the Burma Road was cut by the Japanese offensive. However, United States freight planes are currently reported to be carrying more supplies to Chungking than had come over the Burma Road. Also, there is reported to be some increase in the air support being sent into China. All in all, China's situation is grave.

The future of India likewise is uncertain. The English, in an effort to unite the Indians in a progressive war effort and to solve political problems, in March sent Sir Stafford Cripps to present British proposals which included dominion status. In spite of these proposals not being accepted, the war effort in India is going ahead. Influential Indian spokesmen have said that every foot of India will be defended to the death by the Indian population. Sir Archibald Wavell is in command in India, and United Nations strength is being increased. American and R.A.F. planes based in India have made repeated raids on Rangoon in southern Burma.

The fact must be faced, however, that the United Nations have largely lost control of the eastern part of the Indian Ocean. In late March the British withdrew from the Andaman Islands southwest of Rangoon, and the Japanese took these over and also moved into the Nicobar Islands to the south. The next Japanese thrusts in early April were large but unsuccessful raids on Columbo and Trincomalee on the Island of Ceylon off the southeast coast of India and on the cities along India's east coast.

Although United States bombers have made successful raids on the Japanese in the Bay of Bengal, particularly their base at Port Blair in the Andaman Islands, United Nations ship losses there have been high. Seven merchant vessels including one United States ship were shelled and sunk on 6 April according to an official announcement. Another report put the total United Nations losses in the day's battle at 18 merchant ships.

Madagascar.—Early in May, after British Marines and commandos overcame the resistance of some 7,000 Vichy French forces in two days, the British took over Diego Suarez, Madagascar's most important naval base at the north end of this island off the east coast of South Africa. The situation elsewhere in the island is indefinite; but by this move, made with the express approval of the United States, the British have for the time being forestalled Axis occupation of Madagascar, which would practically sever United Nations sea lanes from the Atlantic to their Middle and Far East fronts.

Australia-Dutch East Indies—New Guinea.—United States ground forces in considerable numbers and some air corps units had landed in Australia before General MacArthur arrived there 17 March to establish his headquarters and, later, to become supreme commander of all United Nations forces in the Australian theater.

At about this time Japanese raids on Darwin and other Australian cities increased; but no large scale invasion was attempted, perhaps because Japan had decided first to consolidate her positions in the Dutch East Indies or because increased bombing raids by United Nations planes prevented her from establishing the necessary invasion bases. While the Japanese were heavily bombing Port Moresby, New Guinea, in late March, United States and Australian fliers struck hard at Japanese landing places at Lae, Salamaua, and Finschauen on New Guinea's northeast coast.

By April the number of ships lost by the United States Navy was 25, but, at the same time, American Army and Navy forces were credited with sinking more than 200 Japanese ships, including 29 warships. Also, by mid-April there were increasing signs of growing United Nations strength even though the Japanese had expanded operations to include bases in New Britain Island and in the Solomon Islands group.

A greater naval set-back for Japan came in early May, however, in the battle of the Coral Sea off Australia's northeastern coast. Here American Army and Navy forces, with some allied support, sank or badly damaged at least 19 Japanese ships including two aircraft carriers. Our losses were at that time termed slight and since have been placed at three vessels. Apparently this Japanse armada was headed for points along the Allied supply line to Australia and New Zealand.

Japan is Bombed.—On 18 April, Japan for the first time became an active theater of World War II. Nineteen weeks after her infamous attack on Pearl Harbor, Japan felt the blows of an American bombing force led

by Brigadier General James H. Doolittle. Among the targets bombed from a low altitude, in attacks which took the Nipponese by surprise, were installations north of Tokyo, the navy yard at Yokohama, the Mitsubishi aircraft factory at Nagoya, and shipyards, fuel storage tanks, and ammunition dumps at Yokesuke, Kenagawa, Kobe, and Osake. Damage is estimated to have been very great, and confusion among the people is thought to have been considerable.

The Philippines.—Major General Jonathan M. Wainwright, who had been in the Philippines since October 1940, took direct command of American-Filipino forces there on 17 March when General Douglas MacArthur's headquarters were transferred to Australia. By this time General Tomoyuki Yamashita, who led the Japanese in conquering Malay, had succeeded Lieutenant General Masahara Homma (who reportedly committed hara-kiri because of his failure to break down the resistance of our forces) as Japanese commander in the Philippines. Soon thereafter the Japanese renewed their attacks from the air on Corregidor and on the Bataan front.

In early April aerial assaults were combined with tank attacks, and wave after wave of infantry crashed the right flank of the American-Filipino line. The weary, half-starved, malaria-ridden troops counter-attacked, but could not withstand the stronger enemy forces and the Japanese swept down the east coast of Bataan, forcing a surrender 9 April. Some 65,000 troops and civilians were taken prisoners.

For almost a month thereafter, the island fortresses of Manila Bay—Mills (on Corregidor), Frank, Hughes, and Drum—fought off air raids and withstood shelling from heavy caliber shore batteries. Finally, "the devastating artillery and air attacks, combined with a shortage of food and ammunition, sealed the fate of the brave garrison. The enemy on the night of 5 May made a successful landing attack, and after several hours of savage fighting, the forts capitulated."

Meanwhile, Japanese landing parties succeeded in establishing themselves in other islands in spite of considerable resistance by American-Filipino groups who made them pay a tremendous price in men and materiel for all ground gained. Since Corregidor fell, there has been no announcement concerning the situation in Panay, Cebu, Mindanao, and other of the islands.

The Pacific

The Sea Battle Near Midway Island.—After what was perhaps a feint on Dutch Harbor, Alaska, on 3 June, a Japanese naval-air armada the following day attempted in the mid-Pacific to invade Midway Island which had previously withstood five assaults. American defenders, however, were on the alert and seized the offensive, crippled enemy ships, and sent the survivors limping away. Reports by the Navy Department state that two, perhaps three, Japanese aircraft carriers were sunk with loss of all their planes; and one or two additional carriers were badly damaged. Three of their battleships, four cruisers, and three transports were damaged; and one Jap destroyer was sunk. One United States destroyer was sunk by a submarine, but near-by ships rescued the personnel with small loss of life. One of our aircraft carriers was hit, and some planes were lost. Personnel casualties were light among United States units. Army and Marine Corps aircraft joined the Navy planes in repulsing the attackers and routing them.

The Western Hemisphere

The Aleutian Islands off Alaska.—Secretary of War Stimson warned this nation that we must expect raids on our west coast as reprisals and as face-saving devices; and 3 June, Japanese planes twice within six hours raided Dutch Harbor, United States naval base on the Aleutian Islands 600 miles southwest of Anchorage, Alaska. The first raid set warehouses afire and caused some casualties; the second may have been, judging from meager reports thus far received, in the nature of a reconnaissance. These were the first air raids of the war striking at objectives in the Western Hemisphere.

Admiral Nimitz's report of the Naval battle in the Pacific stated that the Japanese invasion sent against Midway Island was in addition to an undisclosed number of their ships sent against Dutch Harbor at the same time. From Washington, Admiral King said that the situation in the North Pacific was still obscure "but it is going on." Because of the heavy fog which blankets this area most of the time in this season, observation and location of enemy units has been difficult.

Shortly after, the Navy announced that Japanese had made a small-scale landing on the Island of Attu in the Aleutian group and had sent ships in among the Rat Islands in their first efforts to gain a hold in the Western Hemisphere. Both ships and landing party were attacked by Army and Navy aircraft in spite of bad flying weather, but no definite reports as to the progress of the operations have been made public.

Mexico.—On 30 May, the Mexican Senate unanimously approved a declaration, previously approved by the Chamber of Deputies, that the country had been at war with the Axis since 22 May.

Mexico's army, navy, and air force, while not large enough for offensive operations, can assist much in guarding Mexico's 6,300-mile tortuous coast line; her actions may induce other of her eight Latin-American neighbors, who have broken relations with Axis nations without declaring war, to follow suit and perhaps will exert some influence on still neutral Argentina and Chile. In addition, Mexico can provide much-needed metals, oil, and other war supplies. Also, her recent action may pave the way for stronger action against Axis fifth columnists throughout all Latin America.

Martinique.—To remove the latent threat of use of French naval vessels at Martinique against the United Nations, the United States in early May sent emissaries to Admiral George Robert, French High Commissioner of that island, and it was later announced that an aircraft carrier and two cruisers were being immobilized in the presence of United States naval officers. The United States refused to consider Laval or the Vichy government in these negotiations, which brought forth from Laval notes of protest that have gone unheeded.

South America.—Sinking of Brazilian ships off her coast led that nation (which has severed diplomatic relations with Axis powers but is not at war) to join the United States in patrol activities and defense against the submarine menace.

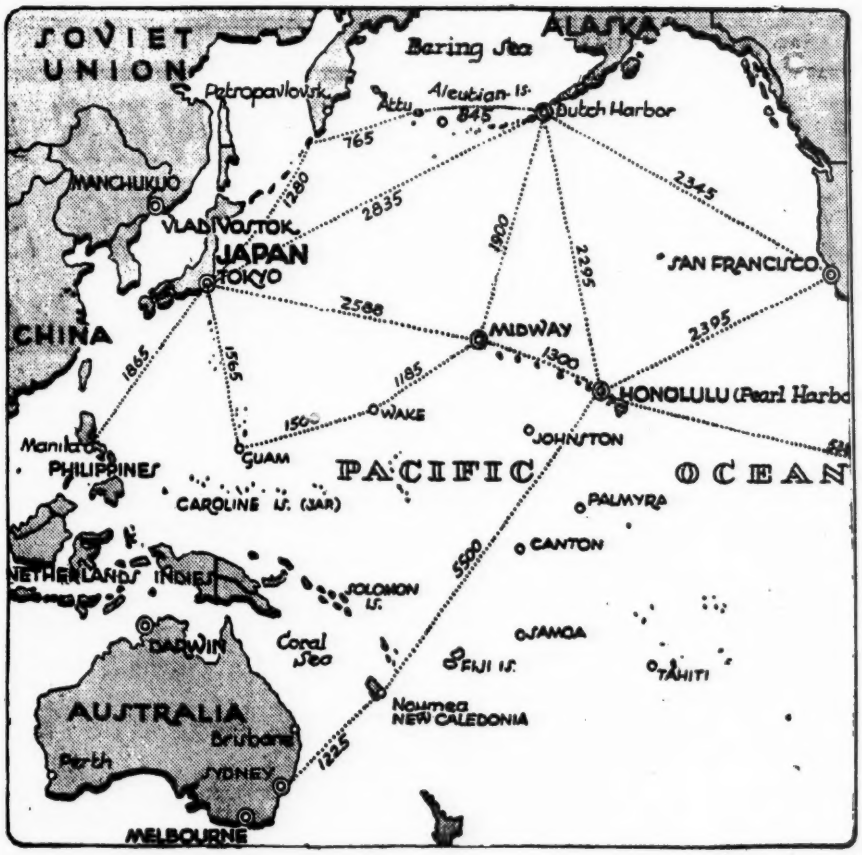
Brazil's southern neighbor, Argentina, who like Chile has not broken with the Axis, is protesting against the sinking of one of her vessels, but has taken no further action.

The Battle of the Atlantic

In this theater almost all action during the past three months has been concerned with U-boat attacks on allied and neutral shipping along our Atlantic shore and efforts to control or eradicate this costly menace.

As the sinkings along our Atlantic coast increased, army and navy defense forces were further coordinated, and present indications are that sinkings off the United States Atlantic coast are diminishing. However, for the first time in history two vessels were sunk in early May in the St. Lawrence River. Losses are increasing, it seems. From 7 December 1941 to 23 May 1942 the reported sinkings of allied and neutral merchant vessels in this area numbered 210.

Thus, although U. S. merchant ships are put into service at the rate of two a day, the shipping problem continues grave.



MILITARY NOTES AROUND THE WORLD

CANADA

Naval Commandos:

A special force of intensely trained seamen manning specially constructed boats is being set up by the Canadian Military Command in cooperation with the British Admiralty. The special force will constitute the Canadian Naval Commandos.

(*London Times Weekly*)

CHINA

Evacuation of Chinese Industries:

China offers an example of military skill, which despite miserable equipment, finally stopped the Japanese army in its tracks; she offers us bases within easy bombing range of Japan; a manpower even greater than that of Russia; a unique knowledge of Japanese military tactics. Greatest of all China offers us a spirit and an example.

When the Japanese moved in on China they seized her factory regions, but they didn't get all the factories. The Chinese managed to carry away into their free interior some 150,000 tons of machinery, which were used as nucleus to build new industries. The Chinese government helped finance thousands of little industrial plants employing from half a dozen to a hundred men. Thus, from almost nothing, in the midst of war, China created an industry able to maintain an army of 3,000,000 men.

(*American*)

CROATIA

High Cost of Living:

The Axis-sponsored Croat state seems to have established a new European record with a rise in its cost of living by 74 percent since September 1940, when it formed part of Yugoslavia, according to an analysis of the cost of living in Europe, published by the Reich's Statistical Bureau.

(*Press Reports*)

FRANCE

New Caledonia:

New Caledonia, French island of Melanesia where a contingent of American troops has recently landed, is situated about 870 miles east of Australia. It covers a surface of about 6,950 sq miles. New Caledonia's population numbers about 53,000.

The island is about 250 miles in length and only about 25 to 31 miles in breadth.

It consists of primary formations throughout the whole of the northeast part of the island. Sedimentary formations exist in the form of a belt along the western coast. Great serpentinous extrusive masses constitute the main body of the island which is of an essentially mountainous nature. The highest points are Mount Panié, about 5,395 feet in the north, and Mount Humboldt, about 5,343 feet.

The Diahot is the only river of any consequence on the island. The shore is surrounded by a barrier of coral reefs which continue on to the north for a distance of more than 150 miles. There is a channel which is usually navigable, between the shore and the reefs.

The Loyalty Islands, composed of coral plateaus, are three in number (Ouvéa, Lifou and Maré) and constitute an island mountain chain parallel to the island of New Caledonia at a distance of about 50 miles to the east.

The climate is healthy and temperate. The rainy season lasts from December to May. There is rainfall, however, at all times of the year. Hurricanes are not infrequent.

Tropical forests occupy an area of about 500 sq. miles. Elsewhere, vegetation is somewhat scarce and consists of thickets and grassy lands.

There are but few animals. There are no indigenous mammals, but a few of the birds found on the island are found in no other place.

The native population is related to the dark race called Melanesian. It is intermixed to a slight extent with Polynesian. The New Caledonians exhibit all the characteristics of the Papuans. There are an agricultural people, raising taro, sugar cane, yams, bananas and coconuts. Since French occupation, cannibalism has largely disappeared.

The natives are fairly industrious, manufacturing mattings, baskets, cordage, axes and adzes of stone or shell, war clubs, slings, javelins, etc. They build canoes of hollowed-out trunks of trees which they couple together side by side with cross pieces, or provide with out-riggers to prevent capasizing.

Each tribe is governed by a chieftain assisted by a council of elders. Under him are the witch doctors, soothsayers, warriors, people and slaves. Women occupy a very low position.

New Caledonia is very rich in mines, gold and copper in the primitive formations; iron, chromium cobalt and nickel in the serpentine formations; coal in the Cretaceous. Only the nickel has been seriously worked, up to the present time.

The principal agricultural product is coffee. Other important products are sugar cane, tobacco, pineapples, corn and beans Timber and fishing industries are also of some importance.

Nouméa is connected with the other coast points by steamship lines which also extend to the New Hebrides. A monthly steamship service connects Nouméa with Marseilles by way of Australia and the Suez Cannal. The average time required for the trip is 38 days. New Caledonia has been connected with Australia by cable since 1893.

New Caledonia, discovered by Cook, was annexed by France in 1853. It has been particularly the scene of an experiment in penal colonization.

(*Nouveau Larousse Illustré*)

Madagascar:

Madagascar, a French possession, now under British occupation, is a large island in the Indian Ocean located east of Africa and separated from it by the Mozambique Channel. It is 1,037 miles in length by 248 miles in average width and has a surface area of 228,512 square miles, considerably greater than that of France.

The coast line, whose total length is some 2,795 miles, is, generally speaking, but little broken. Particularly on the East, the coast, which is low and lined with lagoons, is almost straight from Fort Dauphin to the Bay of Antongila. Further northward, the proximity of the mountains renders it less regular and, owing to its secondary roadsteads as well as its natural defenses, the broad bay of Diego-Suarez which is cut into the southern tip of the island, possesses a naval and military value of first order. The roadsteads of Nosy-Bé, further to the West, are more open. A few other bays such as those of Narinda, Mahajamba, Bombetoke, Marambitsy and Baly, are also of some importance.

From cape Saint-André to the mouth of the Mangoka, the coast, which is sandy and muddy, offers scant shelter, and the rivers which empty along it are obstructed at their mouths by sand or mud bars. Also in the Southwest, coral reefs interfere with navigation and the Bay of Saint-Augustin is the only one worthy of mention in this region.

Almost completely in the tropical zone, Madgascar possesses a hot and moist climate which is modified to a considerable extent, however, by the altitude of the high portions of the country. At sea level, the maximum temperature (in January), is 91 degrees Fahrenheit, and the minimum (in July), 61 degrees Fahrenheit.

The temperature is lower in the central mountainous region. At Tananarive, for instance, the maximum is only 73 degrees Fahrenheit and the minimum 43 degrees Fahrenheit, while in the mountains of Ankaratra, the thermometer sometimes goes down to freezing.

The year is divided into a dry season (March-November) and a rainy season (November-March). The amount of annual rainfall varies greatly. It sometimes exceeds 138 inches at Tamatave and averages 41.34 inches at Tananarive. In certain parts of the South, it rarely exceeds 11.8 inches.

The eastern slope which is well watered but broken, possesses numerous water courses but few larger rivers. The largest, the Mangoro, rising in the valley of Ankay, and the Mananara, rising in the central mountain country,

are broken by falls and rapids. In the West, where the slopes are gradual, two rivers are to be mentioned as water routes, the Betsiboka (373 miles) which has its origin in the central mountain section carries boats of light draft from the point of its junction with the Ikopa, and the Tsiribihina, whose course is interrupted in the plains of Sakalave. The Mangoka (217 miles) is comparable with the preceding river in point of size and length of basin, but the existence of falls, prevent its use for navigation and certain smaller stream such as the Sofia, Mahajama and the Manambolo possess a greater actual navigational value.

A few lakes are to be noted: on the west coast, Lakes Kinkony, Ampary, Iotry and Tsimanampetsotsa; in the interior, Lakes Alaotra and Itasy.

The population appears to be between three and four million. The country is not thickly settled except in Imerina and a few portions of the coast. The capital city, Tananarive, is the most densely populated area. Other large cities are, Fianarantsoa in Betsilio, Fort-Dauphin, Manajary, Tamatave, Vohemar and Antsirane on the east coast; Majunga, Maitirano and Tulléar on the west coast.

According to legend, Madagascar was originally inhabited by dwarfs, the Kimos, no traces of which have ever been found. Neither have any traces been found of the Wazimbas, other traditional dwarfs.

The present inhabitants, designated by the collective name of Malagasy, are, some of them negroes, others Malayans and Indonesians who came in at a very early period in "prahos" or out-rigger canoes from the archipelagos beyond Malacca.

Arabian remains have been discovered near the northwest coast on the little island of Mandza and about 1025, a little band of Arabians settled near Fort Dauphin. Also East Indian and European traders settled on the east coast and in the southern portion of the island.

The population of Madagascar is, therefore, greatly mixed, and the word Malagasy, with which it is usually denoted, has no definite meaning.

The native language, the Malagasy, belongs to the Malayan-Polynesian group of languages. It is closely related to Battak, the dialect of Sumatra, and its grammar is very simple.

This language is divided into two main dialects, the Hova and the Sakalave. The Malagasy, like the Malayan, is an agglutinative language. It is written with Latin characters. French and English are quite widespread.

The indigenous religion is a crude type of fetichism. There have been many converts to Catholicism and Protestantism among the Hovas, and to Mohammedanism among the inhabitants of the west part of the island.

The Law of August 6, 1896, declaring Madagascar a French colony, has placed the possession under the general regime of the colonies to which the "Senatus-consulte" of 1866 (Regulation of Decress) does not apply. The legislative authority is the "Legislator of Common Law," except in cases brought up by Parliament.

The governor general organizes, directs and supervises the various services, appoints secondary civil functionaries and has control of land and naval forces. He is assisted in his duties by the chiefs of the various services and by an administrative council.

The districts of Diego-Suarez, Nossi-Bé (or Nosy-Bé) and Saint-Marie, belonging to Madagascar, have been organized as communes governed by a mayor-administrator.

The same sort of municipal government has been applied to Tamatave and Tananarive.

The island is divided into civil provinces and military areas. A native functionary acts in cooperation with the resident French administrators. There are also five independent areas. Justice is administered by French courts and, in native cases, by mixed courts.

Madagascar, on account of the diversity of its climates and products, is at the same time a residence, commercial and exploitational colony.

The central region, (Emyrne and the Betsilio country) whose climate is healthful, produces rice, principally (the main native diet), cassava and corn. Cotton grows wild. The fibre obtained from the rafia palm serves in the weaving of cloth. Hemp grows all the year round.

The coast regions, characterized by a hot and damp climate, are more suited than the plateaux for the cultivation of tropical plants. The main products from these are coffee, cocoa, vanilla, coconuts, pepper, sugar (sugar cane) and rubber.

The intermediate region, that of the medium altitudes, 1650 to 2600 feet, is especially well suited for stock raising, already one of the most important occupations of the Hovas.

The forested area of Madagascar is estimated at 38,600 square miles. Rubber is the principal product of the forests and woods suitable for fine wood work are also found.

Gold is found in nearly all the river sediments of the island, silver and lead in the vicinity of Lake Alaotra, copper in the central part of the country and iron nearly everywhere.

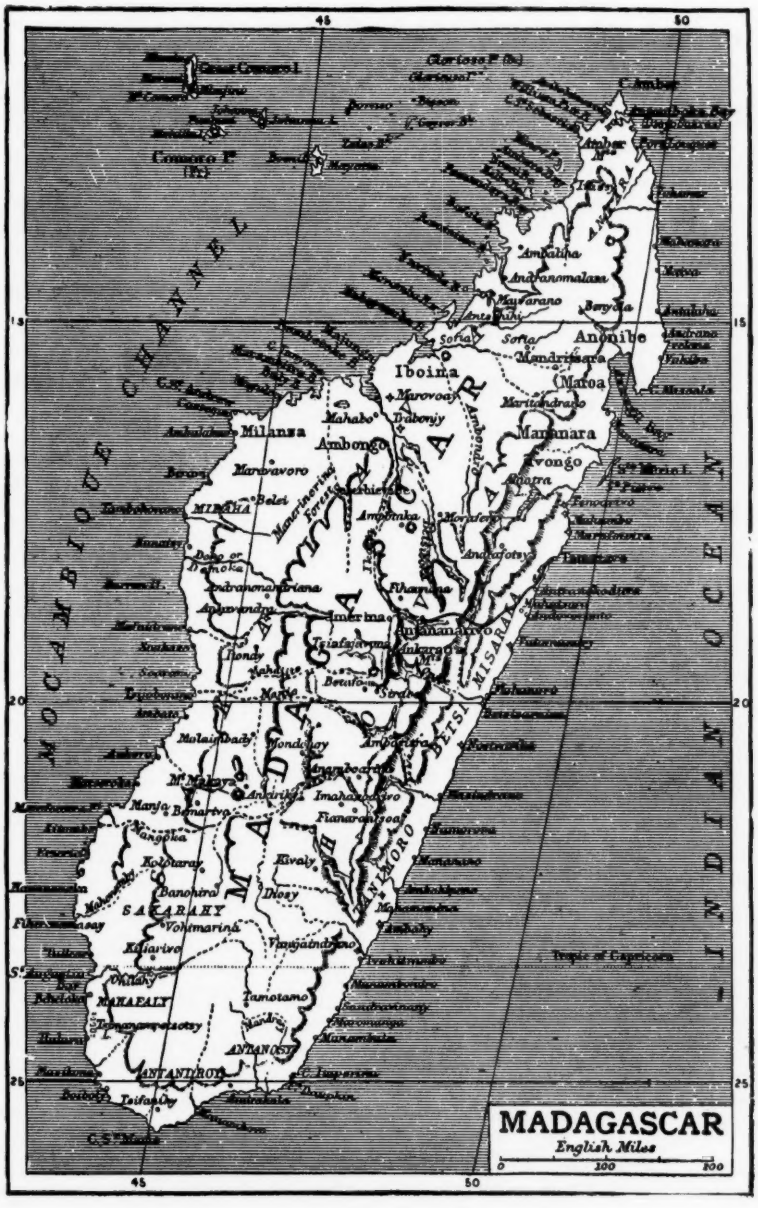
Coal is found around the circumference of the Bay of Ampasindava, but in rather thin veins. The manufacture of sugar, rum, ceramic products and canned foods is of some importance.

The Hovas practice the weaving of silk and cotton and also manufacture cloth of hemp and rafia fibres. They distill sugar cane to obtain alcohol, and manufacture soap, dyes, and work in leather.

Madagascar is still wanting in the matter of routes of communication. Aside from native trails, the only roads passable to vehicles run from Tamatave and Majunga to Tananarive. Several French ship lines regularly serve Mananjary, Tamatave, Saint-Marie, Diego-Suarez and Majunga. Subordinate boat lines complete the service to the less important ports.

The telegraph lines of the interior are connected with the universal network by a cable which connects Majunga with Mozambique.

Outside commerce has greatly increased since the annexation of Madagascar by France. It is carried on particularly with France. The imports (cloth, drinks, food-



stuffs, tools) considerably exceed the exports (live cattle, rubber, flax, hides, rafia, vanilla and gold).

In peace time the defense establishment of Madagascar consists of 1,580 Europeans and 3,720 natives. The police functionaries, most of whom are natives, number 4,400.

(*Nouveau Larousse Illustré*)

Flying Boats:

Vichy is reported to be building five large flying boats capable of flying the Atlantic nonstop in 20 hours and carrying 50 passengers at a speed of 180 m.p.h. This is thought to be the Potez 40-ton flying boat.

(*The Aeroplane*)

GERMANY

German Army Repair Troop:

The German Army Repair Troop known as "Der I-Trupp" (abbreviated for Der Instandsetzungstrupp) usually consists of three blue-uniformed men whose duty it is to make minor repairs to cars and motorcycles, check and overhaul motors. Due to the nature of their work these men are not subject to the usual regulations of military routine and discipline. They have their own hanging hammocks in a trailer attached to one of the H trucks (Hilfswagen) of a motorized company. These men often pick up valuable material such as pipes, cables, spark plugs, and tools found in enemy country. They do not have all of the complicated and electrically-driven tools which are found in the main workshop truck where the major repair work is accomplished.

(*Allgemeine, Automobil Zeitung, Berlin*)

Rocket Bombs:

The Germans have been conducting tests with rocket bombs propelled by a sizzling rocket, presumably to gain greater accuracy of aim and greater penetration velocity.

(*Press Reports*)

The Air Force:

Qualified aviation experts in England have calculated that more than two-thirds of the Luftwaffe is being held in Europe and Africa to fight off the British and allied air attacks. It is estimated that the German first-civil planes are distributed as follows: France and the Low Countries—1,050; Norway—300; North Africa—500; Greece and Crete—100; Germany—400; the Balkans (combined Rumanian and German forces)—200; Russian front—1,600; total R.A.F. pindown—3,050.

(*London Sunday Times*)

Synthetic Gasoline:

Altogether there are 20 factories under construction for the production of synthetic gasoline—in Czechoslovakia, at Moravska-Ostrava, and the region of Brix and Dux. These factories were scheduled to start production in the spring of the year 1942. Altogether four million tons of gasoline are expected to be produced yearly. The German Army Supreme Command believes that this, along with current production of synthetic gasoline, and the production of natural petroleum now accessible to the Reich, should be enough to cover the gasoline consumption of the armed forces.

(*Press Reports*)

Super U-Boat:

The diary of a German soldier, picked up by the British on a Libyan battlefield, contained an entry which would suggest that the Germans have a six thousand ton supply carrying submarine.

The largest known submarine to date was the 2,700 French "Surcouf," recently sunk.

(*Press Reports*)

Hitler made Supreme Commander:

By virtue of a decree adopted by the German "Parliament" on April 26 at Hitler's demand, the latter became Leader, Chancellor, Minister of Defense, Commander in Chief of the Armed Forces, Personal Commander of the Army, Supreme War Lord and Supreme Law Lord.

(*Press Reports*)

Population:

Figures on the population and the territory of the Reich in May 1940 were released by the Reich Statistical Bureau. They include the increases as a result of the Reich's annexations up to May 1940, and, while the figures were preliminary, they are of interest.

The population of the Reich for May 1940 was given as 89,634,000 to which should be added 7,000,000 of the Protectorate of Bohemia and Moravia. Futhermore the population of the "General Government Poland" is estimated at 10,600,000 which brought the grand total of all territories to approximately 107,200,000 by May 1940.

Excluding the General Government Poland, the territory of the Reich expanded from 468,620 sq. kilometers in 1933 to 730,196 sq. kilometers by May 1940, while the population increased from 68,474,132 in 1933 to 96,634,000 by May 1940.

While any figures at the present time are incomplete, it has been estimated that from March 1938 (seizure of Austria) to June 1941 (conquest of Greece and Crete) Germany added a grand total of 743,350 square miles, and 147,197,000 population. These figures, subject to revision, do not include the territory or population under German control in Russia (estimated in November 1941 at 650,000 square miles and 65,000,000 population).

The year 1940 may be recorded in history as the year of the greatest national migration within Europe. Approximately 500,000 people either of German origin, but of foreign nationality, or who were German citizens living abroad, migrated by choice or by necessity to Germany.

(*Press Reports*)

GREAT BRITAIN

British Shipments to Russia:

Announcement of the arrival in England of Russian specialists to inspect and supervise the manufacture of large quantities of machine tools and electrical equipment has been made in the British press. Some consignments have already been shipped to Russia and many of the Soviet factories which have recently come into production are using machine tools made in Britain.

(*London Times Weekly*)

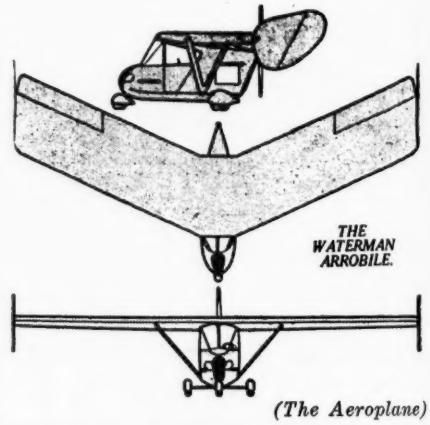
Gliders:

In a recent speech, the General Officer commanding the British airborne division stated that it has been proven that gliders cannot be landed at night, even in bright moonlight, without heavy casualties. The machines can land in any open country either on their wheels or by skidding to ground and they will take enormous punishment before the troops inside are hurt.

(*London Times Weekly*)

Tailless Aircraft

Experiments are being made with tailless types of aircraft. One of these, the Waterman Arrobile, is portrayed in the sketch below.

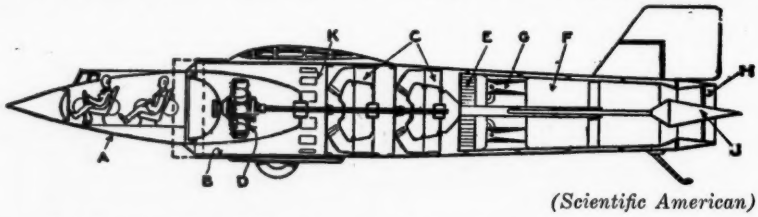


(*The Aeroplane*)

ITALY

Jet Propulsion:

A jet propulsion machine has been flown somewhere out of Milan at the Forlanini aerdome. Somehow or other, *Flight*, of London, has obtained more definite information on the new jet propulsion aircraft, which is perhaps the very first machine ever flown without an air screw. It is the conception of an Italian engineer, Campini, and has as its objective the replacing of the orthodox propeller power plant which loses efficiency at high altitudes.



(*Scientific American*)

The design of the airplane as a whole is of no particular interest, but the sectional view shown in the sketch illustrates what is of great interest, namely: the principles of the new power plant. At (A) is the front of the cabin in which two occupants are seated; (B) is a cylinder enshrouding the radial aircraft engine. Air is subjected to an initial compression by the forward motion of the aircraft and is additionally compressed by means of two blowers; (C) driven by the engine. The exhaust of the engine discharges directly into the main air-stream adding heat and still further increasing the pressure of the air. At low altitudes, apparently the engine drives an ordinary propeller, and behaves like a conventional power plant. For high altitude flight, a further supply of fuel is introduced into the combustion space (F) into which the compressed air and fuel are guided through (E) and the annular mixing chamber (G). The products of combustion are discharged through discharge nozzle (H), with cone (J) for varying nozzle orifice. The reaction of the jet issuing at (H) supplies the forward thrust. Some reports have it that even at low altitudes, the apparatus can function purely as a jet reaction device.

(*Scientific American*)

JAPAN

The Japanese Army:

The Japanese are using a 7500 ton carrier which disgorges a total of 158 small craft from its sides rolling out like baggage from a luxury liner; they shoot down baby weather

parachutes that give wind drift and velocity to oncoming bombers; they have a 3-ton "tankette" that "would fit into a hall bedroom," but has a speed of 33 mph, carries three men, two machine guns; they have a 7-ton armored car which takes ten minutes to change from rubber wheels to steel rims and become a 37 mph rail car; they bring along prefabricated huts, fuel, and spare parts right down to searchlights, during invasion operations.

Every Jap soldier has been ordered never to surrender and is constantly warned that he will be summarily executed when caught by the enemy.

The Japanese soldier is a capable trooper. He is easy to command, very good at looking after himself, his arms, his uniform and equipment. Physically, he is hard and well trained. He has remarkably good powers of endurance. Japanese peasants make up the rugged backbone of the infantry, but soldiers from the cities also have good physiques.

The Japanese fight their war with great simplicity in organization and administration. Simple verbal orders are issued. These are phrased to correspond to the mentality of the troops. These orders deal in the most direct terms with attacks on definite objectives.

The Japanese are taught that it is sacred honor to die in battle for the Emperor. Every operation shows that their trops are trained in two vital factors: morale and the necessity of offensive action. Both these factors right now are at their highest efficiency because of an unbroken record of victories in the field.

It has been proven, as in Bataan, that the Japs cannot take a sudden reverse. In one heavy direct assault by American troops against a Japanese force in a strong point, the Japs threw down their weapons, dashed 100 yards to a cliff at their rear and threw themselves over, to fall 150 feet to their death.

(*Life*)

LIBYA

German Tank Ruse:

The Germans in Libya have tried the following trick in an attempt to trap weak columns or patrols unsupported by tanks. Lying "dead" in the desert around battle-wrecked and damaged enemy tanks in recent operations, an enemy tank has been more than once encountered laid up amidst the wrecked machines, remaining absolutely immobile and to all appearances itself a derelict. If a small, unprotected supply column or patrol passes along the route in blissful ignorance of the ruse, the enemy suddenly comes to life and attacks at close range with devasting results. But if a strong patrol or tank column approaches the lurking peril, it remains stationary and its commander hopes to be taken for an old casualty. In such cases a wise patrol commander sends forward an armored scout car to approach the suspect and, screening himself as far as possible by using the derelict machines, takes stock of it and signals whether it is alive or dead.

Another favorite German ruse is the masked battery trick and the dummy tank column. The masked battery ruse is usually the employment of a heavy field gun-howitzer mounted in a convenient position for attack, camouflaged by a weak force of light tanks which cluster around to conceal the guns. The object is to invite attack by one of the allied patrol columns, and if such should be of too heavy a caliber to tackle, they retreat. Should, however, the attack be by a small force, the decoy tanks move aside and the battery heavily engages the patrol at close range.

The dummy tank column is to enable a weak force to give an impression of strength and so discourage attack. By mounting rough wooden or canvas turrets with a wooden gun projecting, and erected on a truck or car chassis, they take their place among a small patrol to give the impression of a heavy force.

(*The Illustrated London News*)

POLAND

German Fortifications:

According to Polish Feature and News Service, the construction of new and formidable defences in Poland is in progress. All the inhabitants have been evacuated from the banks of the Vistula river for a distance of two miles on the west bank and three miles on the east so as to permit the installation of every known military device and to create a barrier to a Russian advance into Germany. The line starts at a point north of Warsaw—the nearest point to the existing defences of East Prussia—and terminates at a point past Krakow.

Some of the unique features of the Maginot Line, which the Germans have examined exhaustively, are to be embodied in the new Vistula fortifications. These will be nearly five hundred miles long and will follow the course of the river to the point where they will connect overland with the defence system of East Prussia.

(*Press Reports*)

RUSSIA

Stream Crossing Equipment:

The above sketch represents a pneumatic ponton used by the Russians for ferrying equipment and men across a stream.

(*Voyenniy Vyestnik*)

Soviet Natural Resources:

According to an interview given by the noted Soviet geologist A. E. Forsman, more than eighty elements of Mendeleyev's Table are found in the Urals, adding that recent investigation has indicated a close geologic link between the Urals and the Kazakh steppes—both rich in strategic metals. Prospectors, he said, have found about 9,000 different minerals in the Urals, including ores of gold, platinum, copper, iron, nickel, cobalt, chromium, titanium, arsenic, zinc, lead and rare earths. In the Kazakh steppes are found gold, copper, tungsten, chromium, nickel and aluminum.

Great coal deposits are scattered along both flanks of the Ural range, the scientist noted. In the west these deposits give way to layers of salts left by the ancient Permian Sea. These valuable salts include natrium, potassium, magnesium, chlorine, bromine and boron. In the western foothills are petroleum deposits which, around Ufa, have been tapped in the highly important oil field known as the "Second Baku."

In the southern Urals and northern Kazakhstan, where industrial and agricultural areas meet, gigantic industrial plants have been set up. In the area centering on Magnitogorsk great mines and blast furnaces are working to capacity. This is where the metal for Soviet tanks, planes and guns is smelted and where the Red Army's most formidable weapons are produced.

(*Soviet Embassy Bulletin*)

Oil Production:

Oil output is being doubled at the Changyatash fields of Kirghizia (Southeastern Russia) by workers operating double the peacetime shift.

The Syzran oil fields in the Volga region are employing increasing numbers of women, releasing men workers for war service.

These oil fields are far behind the battle-front and are not part of the Caucasus fields.

(*Press Reports*)

Industrial Developments:

Some of the recent industrial developments in Russia include:

Expansion of oil production and opening of new wells at the Buguruslan fields, northeast of Kuibyshev-on-the-Volga.

Expansion of coal production in the Aleksandrovsk coal mines on Sakhalin Island.

Increase of gold production in the Karvaz field in Tadjikistan.

Discovery of extensive deposits of non-ferrous metals in the Pamirs. Mining operations are already under way.

Discovery of new lead deposits at Murgaz in the Stalinabad region.

(*Press Reports*)

Soviet Rubber Production:

Most of Russia's rubber is produced synthetically, but the dandelion is the second biggest source. The agricultural program for 1942 envisages a 250 per cent increase in the area sown to this industrial crop in the interior districts of Russia. There is scarcely a region of the Soviet Union which will not produce some quantity of dandelion rubber this year.

This rubber-bearing variety of dandelion has been known to the world of science only ten years. It was found by a Russian, developed in Russia and its production is a virtual Russian monopoly. It goes by the name of "taraxacum koksaghys rodin." Though modest in yield, it has the immense virtue—not possessed by other rubber-producing plants—of being able to withstand severe climates.

In outward appearance Koksaghys is very similar to the dandelion that grows wild in the vacant lots of American cities. Rubber is found in the skin and pulp of the root. The root is dried in the sun and the rubber then extracted by a chemical process. Cultivated Koksaghys roots, after drying, contain 7 to 9 per cent rubber.

As the dandelion is a perennial, its roots are usually not harvested until the second year when the rubber yield is 30 to 40 per cent higher than if harvested the first year. A yield of 200 pounds of rubber extract from one acre of koksaghys is considered a good crop. The dandelion rubber is not equal to tropical rubber in quality but is better than the synthetic product. Russian scientists

have devised special inplements for sowing the minute seeds and digging the roots.

Koksaghys is an extremely hardy plant. It can be grown in any climate where other varieties of dandelion thrive and can stand temperatures as low as 40 degrees below zero. This means that it can be cultivated in almost all regions of the Soviet Union. The best results are obtained when it is planted in black or peaty soil with irrigation and fertilizer. However, it will grow in almost any soil where there is sufficient moisture, although the rubber yield is markedly lower if the water conditions are not right.

(*Chicago Daily News*)

Horse Cavalry:

The extensive use by the Red Army of horse cavalry during the winter months calls attention to the fact that this ancient arm is still employed to excellent advantage wherever the terrain and weather make it difficult to make use of the tools of modern mechanized warfare.

The Russians have increased their cavalry forces in recent years, endowing them with great fire power. Russian cavalry is trained for cooperation with mechanized, motorized and air force units. While the horse is not pitted against the tank, it is, nevertheless, effectively employed as a battle auxiliary. Horsemen can take the enemy from the rear, cut through thick forest trails, round up parachutists, etc. Muddy terrain presents serious obstacles to tanks but not to cavalry.

Russian cavalry is armed with tommy guns, machine guns and sabers. It is commanded by Lieutenant General Pavel A. Belov, whom the Russians regard as the greatest cavalry leader since Stonewall Jackson.

It is reported that at least one million cavalry have been in training throughout the Soviet Union during the winter months in preparation for spring and summer action.

(*Press Reports*)

UNITED STATES

Lend-Lease Aid:

President Roosevelt announced in May that the April Lend-Lease Aid totaled $677,000,000—an all time high monthly figure equal to the total of exports for the first six months of the program, bringing the total of such aid since March 1941 to $3,835,000,000. The President said that Lend-Lease aid in April was at an annual cost of $8,000,000,000, compared with an annual cost of $4,000,000,000, last December. The major part of aid is supplied in the form of finished munitions.

(*Press Reports*)

Women's Army Auxiliary Corps:

Congress authorized establishment of the Women's Army Auxiliary Corps to the limit of 150,000 members. The initial mobilization under this act will be limited to 25,000 women.

(*Press Reports*)

Light Airplane and Glider Training:

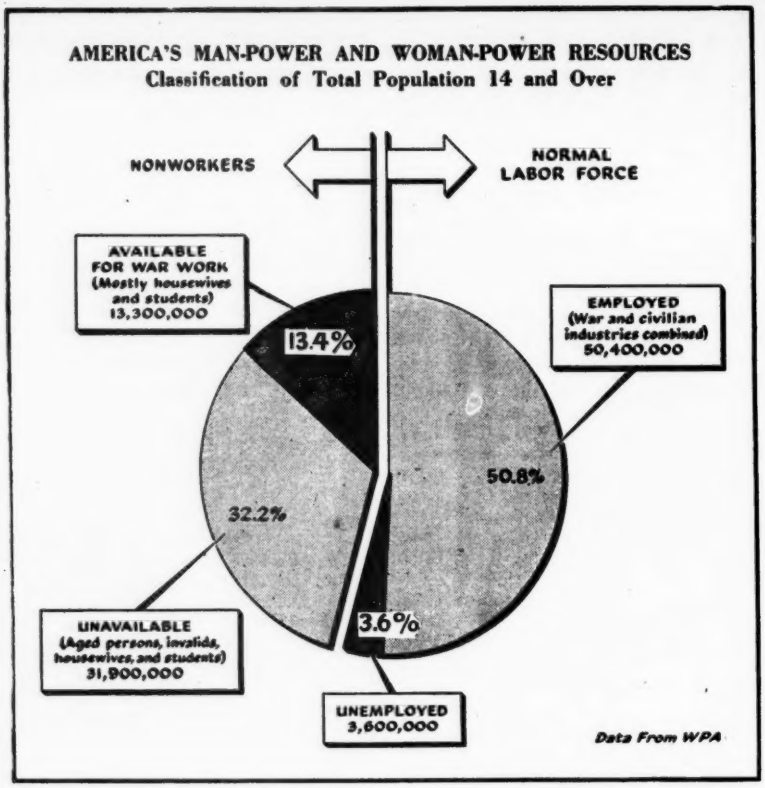
Schools for light airplane and glider training are being established in various parts of the United States, chiefly in the Middle West, to train Army Air Forces glider pilots. Civilian Aeronautics Authority Schools for civilian pilot training will give light airplane instruction while glider instruction will be given at Army Schools. Applicants, 18 to 35, must have had previous aviation or glider training. Those completing the course will be rated as glider pilots.

(*Press Reports*)

Aircraft Production:

The Ford Willow Run bomber plant near Detroit is now in operation. When in full production the plant alone will produce as many heavy bombers as all the factories of the entire Axis are believed to be turning out.

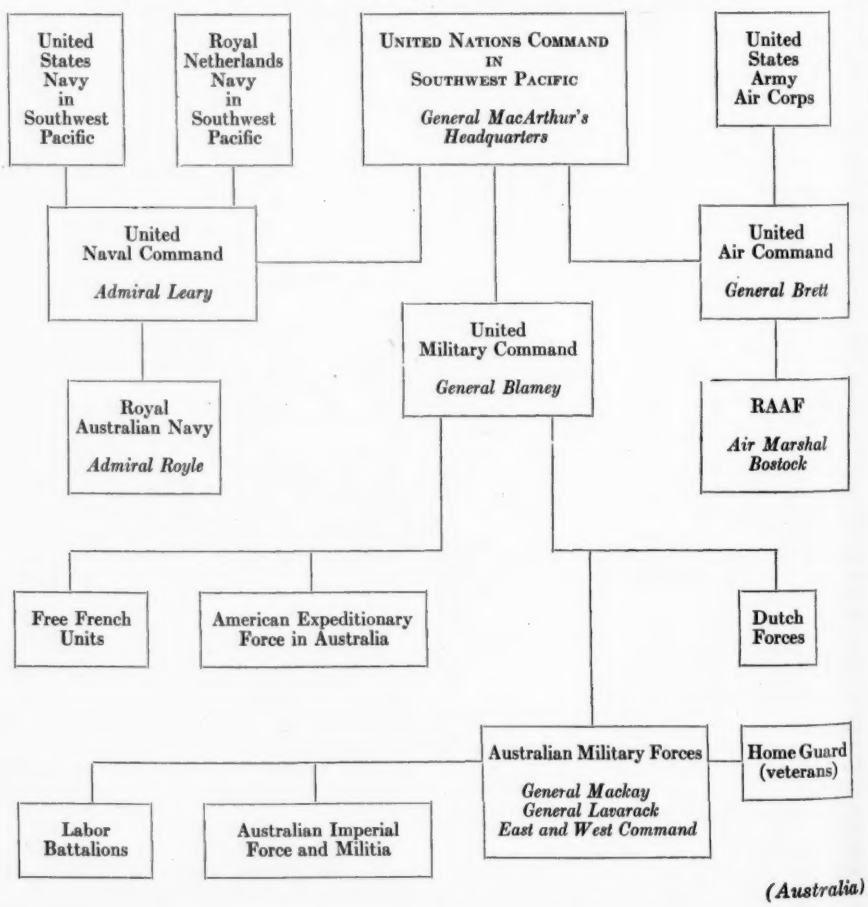
(*Press Reports*)



Newsweek

UNITED NATIONS

Diagram of Structure of United Nations Command in Southwest Pacific.



(Australia)

Foreign Military Digests

Digests of articles from foreign military periodicals; other items of interest from foreign publications are summarized in the Catalog of Selected Periodical Articles.

War In High Mountains

["La Guerre en Hautes Montagnes" by Captain Gallusser in *Revue Militaire Suisse*, February, March 1942. Translated from the French at the Command and General Staff School, Fort Leavenworth, Kansas.]

The particular requirements of our national defense (Switzerland, Ed.) cause us to give our increasing attention to the training of troops in high altitude mountains. For this reason we publish here various studies relative to the technical and tactical training of the mountain soldier.

A Few Preliminary Reflections.

Let us select one of those secondary sectors in the mountains where it is impossible to engage large forces on account of the difficulties in the matter of supply and shelter, and where travel by any motor or horse-drawn columns is absolutely impossible on account of the terrain.

Such sectors are frequent in our country. Usually of great extent, devoid of any resources, they are of interest solely because of the possibilities afforded by them for surprise operations which are not easily carried out in neighboring sectors.

Between the high peaks and ridges, a few infrequent passes permit small mountain detachments to get through. It is impossible for the various trains or heavy weapons to follow them. Supplies can only be carried on the backs of men.

Farther down, a few paths, a grassy plot, or a cabin constitute important points along the way before the forests and ravines are reached, leading to the principal sector. (See sketch.)

This secondary Alpine sector will assume a variable importance which will be a function of the *principal* neighboring sector dominated by it. This principal sector is generally a valley with all its resources consisting of means of communication, roads and highways, railways, villages, etc. In this valley it will be possible to engage great numbers of troops and all kinds of modern fighting equipment, and it will be here that the decisive engagement will take place. But the final result may be hastened, retarded, or even momentarily blocked as a result of the activities of these small mountain detachments working in the adjoining secondary sectors in close collaboration with the main forces in the valley. They are able to work on the flanks and rear of the enemy and transmit important observations by radio.

The selection of men who make up a mountain detachment must be very carefully made. Besides being thoroughly experienced in the mountains, they must have given proof of their spirit of *discipline*, good-fellowship, and self-sacrifice.

Their endurance, accuracy, initiative, and ability to get about in the high altitudes must be developed by special training.

The *equipment* of these men requires special attention. It must be durable and *very light*. It must be of such a nature as to enable the man to live in the mountains in any kind of weather, but it must not hamper him in his movements.

The carbine is by far the best weapon. Group weapons, such as the machine gun or sub-machine gun hinder the man on account of their weight. Also the amount of ammunition used by these weapons is often all out of proportion to the importance of the targets against which they are to be used or the possibilities of maintaining the supply.

Hand grenades, explosive charges, and machine-pistols will be valuable to a certain extent, provided the amounts assigned to the troops remain within moderate bounds and their importance is not exaggerated. These secondary weapons constitute valuable auxiliaries to the carbine, especially in close range fighting.

The tactical method to be employed in mountain sectors seems to be very simple. Briefly stated, it could be compared to the "Game of Cops and Robber."

In view of the great extent of the sector and the small number of men engaged, it is

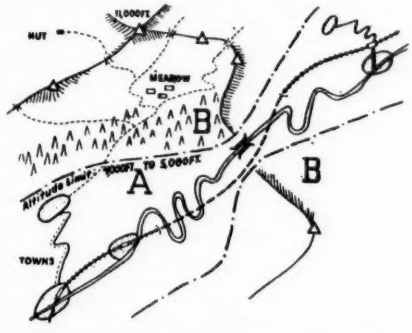


DIAGRAM OF A MOUNTAINOUS SECTION.

A. Principal sector—First class highways and railroad connecting two valleys. Towns in this vicinity.

B. Secondary sector—Altitude ranging from 5,000 to 11,000 feet or more; impassable for any sort of military train.

not possible to form a continuous front. All that can be done is occupy certain very important points and hold them. These include certain mountain peaks, passes and scattered huts. If the enemy attempts the same actions, there will be a race for these points.

When one has gained control of a few successive points, he will be in a position to take advantage of any momentary weakness on the enemy's part in this sector and can make a sortie into his territory, that is to say, he can make a surprise attack on him while he is in a valley, harass his convoys and disappear.

But the comparison between the "Game of Cops and Robbers" and tactics is not so apt if one takes the following three factors into consideration:

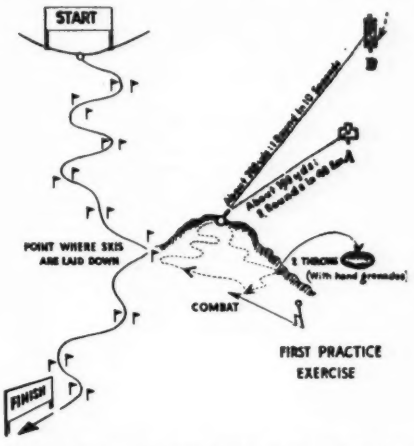
1. liaison, which has to be maintained over long distances and in the face of great difficulties, often prevents the commanding officer of the sector from having a good mental picture of the situation as a whole;
2. the difficulties and dangers of *maintaining supplies* for the various posts; and
3. *time*, which is often the worst enemy, for it may be necessary to abandon, without resistance, even the positions which were the hardest to take.

It is a fact, that for one fighting man in high altitude mountains, a minimum of at least two men are required in the rear: one resting and one for replacement. These men must relieve one another at least every 48 hours and often every 24 hours.

Training of the High Altitude Mountain Fighter.

EXERCISE No. 1.

Purpose of the exercise: Check the skill and speed of the patrol, then require a maximum of his individual effort over a certain trail. There must be a drop of from 300 to



600 feet between the beginning and end of the course. He will have to pass between a certain number of markers on the way down. Midway in the course, the man will be required to remove his skis and crawl out onto a ledge and take up his position with his carbine. A referee will point out to him, successively, targets "A" and "B", which are at different distances and are of different nature.

"A" (about 300 to 450 feet, a G-type target or head) is an enemy who is already in position. He has revealed himself to our patrol by his fire which has come from the direction of the floor of the valley. Our patrol has had the good fortune to catch sight of him and surprise him. The man will have a maximum of 2 shots and 40 seconds for hitting him.

A second enemy shows up, attracted by the first shots and desiring to come to the assistance of his comrade. (The target is visible only momentarily; an E- or F-target is used; time allowed 10 seconds; one cartridge only).

Other enemies have slipped into a position at the foot of the ledge; our patrol knows they are there only by their tracks. He cannot get at them with the fire of his carbine. Two hand grenades must be thrown into a hole approximately 6 feet in diameter.

WOODEN CYLINDER USED AS DUMMY GRENADE

Lastly, he sees an enemy spring up near him who probably intends to try getting possession of his skis. The man tackles him

without weapon or pack and must put the enemy on his back in not over 30 seconds. Only then can he put on his skis and continue his trip.

The trip time and combat time are measured separately. The mistakes in fire, in throwing the grenades, and in the combat are turned into penalty seconds. The man must announce himself correctly at the start and finish. A referee will check his conduct and form.

The course may be varied as much as is desired, made easier or more difficult according to the ability of the participants and the time available for the exercises. In order to avoid serious mistakes, the course should be explained in detail, even travelled over in the sight of all the men so that they will understand everything fully.

There must be referees for the skiing, the firing, and the grenade-throwing. The wrestler must be relieved by others as they finish their trip. This will give them a chance to observe where they themselves have made mistakes. If there are no walls, rocks, or other objects which will shield a man and enable him to raise the disappearing target when the whistle is blown, the target will have to be fixed and a check made of the shots after each man has finished firing. The course should be well laid out and without any unnecessary complications. The trip should not last more than 5 or 10 minutes at the most. A correct record will not only show the good points but call attention to weak ones which will have to be given special attention.

EXERCISE No. 2.

Purpose of the exercise: To check the endurance, speed, ability to judge terrain and accuracy of fire of each patrol.

Selection of site: Difference of altitude 600 to 1000 feet between the start and finish.

Greatly varied terrain, and if possible, a stream bed or a valley leading to a small pass.

Game: The patrol trooper is given the chance to observe for a short time from point "A", the terrain he is to cross. He receives his mission carrying an urgent order to post "F". The liaison between "A" and "F" is broken by the enemy whose numbers are not great but who constantly harass the men attempting to maintain it.

The man sets out; he must cross all exposed places as quickly as possible and make use of all dead angles. When he is prevented from passing, he will attempt to take up a position and fire on the enemy who is blocking his way.

Each time he is supposed to be fired on by the enemy, the referee will blow a whistle and the skier must immediately try to find cover. The referee will then point out the source of the fire. The man will look for a good position for firing a maximum of 2 rounds, at a G-type target or head, in 40 seconds.

If the referees are obliged to whistle three times or if the man is not able to hit the two targets one after the other he is eliminated.

There are referees at the two rises, "B" and "D", which cannot be crossed till the targets *b'* and *d'* respectively, have been hit.

The calculation of the elapsed time plus the time added as penalty for fire (assuming positions, handling the gun) plus penalties for conduct (the announcements at start and finish) and the exact repetition of the order received at post "F" gives the final classification.

Remarks: The same as for Exercise 1 (Concerning preparation). The main difference lies in the fact that the skier descending a slope is harder to hit owing to his speed and mobility (turns); he is able to cross a small rise. In contrast to this, the skier who is mounting the slope moves slowly and is forced to keep on the look-out for cover.

EXERCISE No. 3.

Purpose of the exercise: Patrol trip requiring great physical exertion on the part of every one and testing the spirit of friendliness, also the spirit of discipline toward the commander of the patrol.

The latter will have to show proof of his moral, technical, and physical capacities through his ability to control his men.

Terrain: Trip lasting from two to five hours including several steep climbs (with a total of from 2,500 to 5,000 feet difference in level).

Game: The commander of the patrol receives the preliminary orders in the evening of the previous day. All he is told is the length of time the exercise is to last, the clothing to be worn, the locality (if that is necessary from the point of view of maps), and the time and place of inspection. The whole job of preparing the patrol falls on him; it will be checked, however, and approved for uniformity of packs, condition of weapons, shoes, skis, etc. The patrol, composed of two groups of six men each plus the patrol commander (an officer or non-commissioned officer), is to be thoroughly inspected a half-hour before time of departure. If the preparation is insufficiently complete, the patrol is not to be permitted to leave.

In the meantime, the patrol commander receives the second patrol order posted close to the point of departure. He will now have twenty or thirty minutes in which to get ready without the necessity of issuing any orders.

This order gives nothing but a few points through which the patrol is to pass on the trip in the order in which they are to be reached: for example, A-B-C-D-E-F. He is at liberty to select any route which seems best to him for reaching these points in the order indicated.

He may have, for example, the following tasks to perform (order posted at the point of departure).

1. Carry a report to the commander of post "A" (a referee).

2. Surprise and stop by patrol fire an enemy detachment which is coming up through the valley beyond "B." (This order may be given orally by the referee when the patrol arrives at post "B."

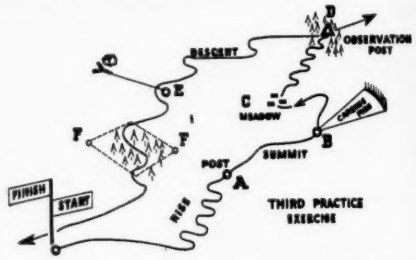
3. Without firing a shot, surprise and capture a small enemy post which is in the huts at "C." Care must be taken to check weapons after leaving "B."

4. Rapidly organize an observation post at the point "D" for observation in the direction of "J." The commander must make a sketch while the patrol rests, consumes its ration, and makes tea (in a sheltered position). Maximum time: 20 minutes.

5. On a descending stretch, the patrol is to be the object of a surprise attack. It is to receive fire from an enemy automatic rifle blocking passage at the point "E." Check the reactions of the men (whether or not they seek cover, etc.), and the orders of the commander relative to locating and eliminating this source of hostile fire (by carbine fire or by means of maneuvers with the aim of getting closer to the enemy and employing hand grenades). The passage will not be free unless the enemy has been disposed of.

6. Pass between known enemy posts at "F" and "F'" without being seen. Space the men very widely, employ speed and keep covered.

7. Announce the patrol on returning. Inspection of each man is to follow. An hour after arriving, the commander is to deliver a complete, written patrol report with a drawing showing the route followed and a panoramic sketch of "D."



In the meantime the assistant patrol commander takes charge of the thorough performance of the duties of interior economy, which is also to be inspected.

The various patrols will depart every 30 or 45 minutes. The planning of the trip and the referee's work require very serious preparation. We had the opportunity of observing, in the summer of 1941, the great interest shown by all the men of a certain regiment who participated in exercises of this type. They had to do a great deal of hard work, but they learned something and put all they had into their work.

It is possible and very interesting to use live ammunition in the automatic rifle which fires on the passing patrol. It is necessary, however, to employ the following safety measures in order to avoid accident:

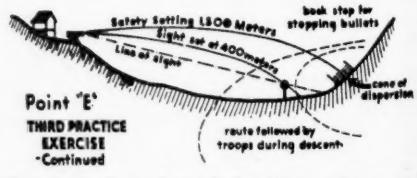
1. The automatic rifle must be firmly fastened both front and rear to supports sunk in solid ground.

2. The spot where the bullets strike must be of ample dimensions and smooth (there must be no rocks or bushes); it must also be steep to avoid ricocheting.

3. A careful adjustment of fire (aim) must be made before the men pass. An observer will check the point where the bullets strike and their action. The exact range and setting of the sights must be known.

4. The rules given in the "Infantry Fire Regulations" concerning the "safety elevation" (especially what is said regarding the dispersion of "cannons A and B") should be carefully followed.

5. A safety officer is responsible for the handling and fire of the automatic rifle (the



changing of the barrel; loading and removal of cartridges; etc.). A referee who follows closely after the passing patrol will direct the fire by means of a signal.

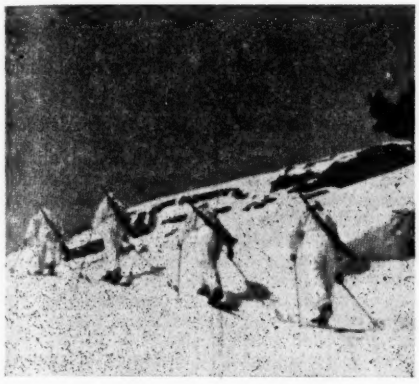
If good judgment is used in the choice of terrain and these few rules are observed, there will be no danger, and it will make the exercises much more interesting. The surprise will be real.

For instance, the automatic rifle will fire only 2 magazines, or say 10 bursts of from 5 to 8 rounds each, well spaced, which will correspond to a fire of from 1 to 2 minutes duration.

The patrol must dash to cover and search for the origin of the fire.

The men will be greatly astonished at first at the great difficulty of this, for the sound is complicated by echoes, and the moral effect is considerable.

Distances should not be greater than 1,300 feet, and too perfect concealment of the automatic rifle should be avoided.



TRAINING PATROL DRESSED IN WHITE

If the gun is discovered, the referee will designate a higher target behind and to one side of the automatic rifle in order to avoid all danger to the men in charge of the automatic rifle (for example 2 or 3 G-targets in a group). The patrol commander will be free to order fire or further movement of his troop with the object of annihilating the enemy. As soon as this task has been accomplished, the referee will permit the patrol to pass on.

EXERCISE No. 4.

Purpose of the exercise: The assignment of a simple and exact mission to a patrol. Check its execution and the decision of the commander on looking over the situation.

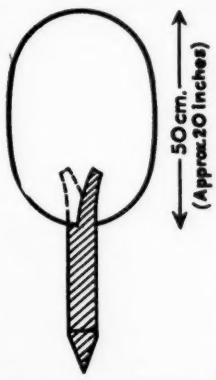
Terrain: Open and, if possible, in an actual patrol sector. Caution will have to be exercised in firing, however, on account of nearness of the frontier.

Game: One patrol receives complete orders similar to those of Exercise No. 3 designating a certain number of the points through which it must pass in reaching its objective. It is a "pursuit patrol."

Another patrol is assigned the mission of capturing point "D" and holding it. Also, it is to retard the movements of enemy mountain troops passing through the points "F" and "F' " and warn the command post in case the passage is forced in spite of all they are able to do. This is a "fixed patrol." Four or five "pursuit patrols" may be sent out with the same mission at intervals of from 1 to 2 hours.

The "fixed patrol" must have sufficient head start to be able to look over the situation and carry out its initial work of fortification (say at least 2 hours). It will continue to improve its defense arrangements (observation post, shelters built of snow or other materials, kitchen, camouflage, etc.). Midway during the progress of the exercises, the commander of the sector will relieve the troops in accordance with the rules. The supply service of this "fixed patrol" as well as the medical service (evacuation) must be in operation (two additional patrols). The exercise may be continued on into the night.

Rules of the game and fire: The "pursuit patrol" must stop at the first blast of the referee's whistle (the whistle will be sounded at the moment when the commander of the "fixed patrol" would decide to open fire if this were an actual case). Each man then places a little round paste-board target in the snow at the point where he was at the moment when he heard the second blast of the whistle. The patrol takes to cover. Having first made certain by visual means, that every one is under cover, the chief referee (an officer) permits the fixed patrol to open fire for a certain length of time, depending on the rate at which the "pursuit patrol" had been moving. Fire is opened at the patrol commander's order. It is stopped by the referee at the end of the assigned time by a third blast from the whistle. (The time allowed will be some fifteen seconds if the "pursuit patrol" was moving at a rapid rate when it reached the zone of fire, thirty seconds if it was moving at a moderate rate, and forty-five seconds if its rate of progress was slow.)



CARDBOARD TARGET FOR EACH MEMBER OF THE PATROL.

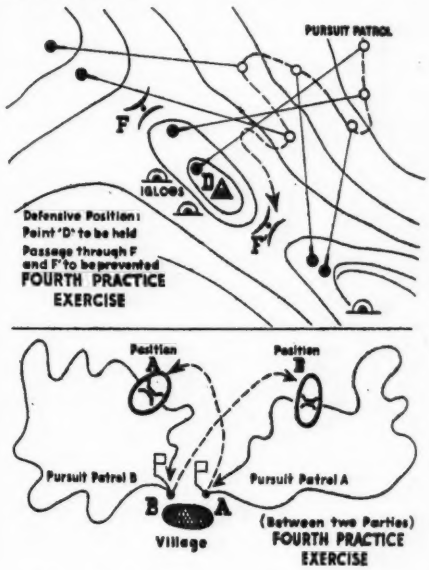
After ascertaining that the men remove the unused cartridges from their weapons and that the weapons of the defenders are on safety, the hits are checked, as well as the number of the shots fired. After this, the "pursuit patrol" is considered to be annihilated. Following a rest ordered by the chief referee, it may continue on its way;

THIS DEFENDER HAS DUG AN IMPLACEMENT FOR HIMSELF IN THE SNOW.

but it is never permitted to fire with bullets at the position. However, if it has any observations which would be useful to the chief referee, it may report these to him; and he will discuss certain points with the commander of the "fixed patrol." The latter will then improve his position while waiting for the next action. He must not forget his reports, his liaison, his supply lines and the necessity for keeping a watch posted and for giving the alarm in certain situations which might arise.

In certain cases the chief referee can authorize a survivor of the "pursuit patrol" which has been attacked to escape in order to warn a succeeding patrol.

The latter, will then attempt to avoid the position in question. What will the commander of the "fixed patrol" do then? He was ordered to hold his point, but also to prevent the passage of other enemy detachments. In any case he must immediately send a good runner with an accurate report to his superior at the command post. This report will contain the number of men, who passed, the hour and direction in which they were going, etc.



This exercise assures the training of a large number of patrols over a period of many hours. The commander of the sector will thus have the chance to see a series of "pursuit patrols" in action and supply, relief, "fixed," and medical patrols in operation.

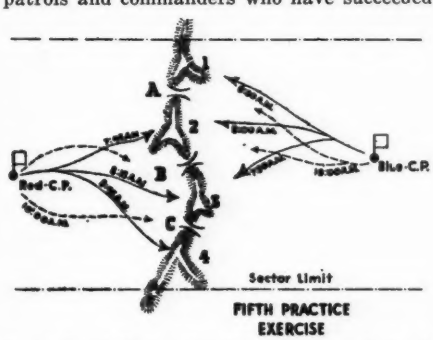
Two parties (A and B) can be formed, a position held, and a certain number of "pursuit patrols" supplied. It will be possible to compare the activity of the two parties who have the mission of providing supplies in such a case. A great deal of attention must be paid to fire, especially night fire, when the paste-board targets must be replaced by small lamps. No patrol is to leave the points indicating the position "A" and "B" unless the proper chief referee has checked his gun to see that it is unloaded.

Each patrol may receive two missions during the course of the exercise. For example: "pursuit patrol" B-1 leaves at 7:00 A. M., returns to the command post at about 12:00 noon, rests till 2:00 P. M., then receives the second mission which is to relieve the "Fixed patrol" in position "B."

EXERCISE No. 5.

Purpose of the exercise: To permit of free movement between two parties, each with at least five patrols at its disposal, in a given mountain sector.

This exercise cannot be done except by patrols and commanders who have succeeded



in each of the successive exercises, 1 to 4. It is useless to attempt such exercises by improvisation.

Terrain: The sector must be large with great differences in level. It must be very

definitely bounded, however, in order to discourage attempts at impossible movements.

Detail: Each patrol will be accompanied by a referee who will keep a patrol record for the use of the chief referee. At the most important of the points where it is necessary to pass, there will be a chief referee. Only blank ammunition is to be fired.

One of the parties is to be dressed in white, the other in grey-green. All disguise and travel by other means than skis, or by walking, are to be forbidden under penalty of elimination. (It is possible that there might be mechanical means or horse drawn sleighs for getting up the slopes.)

Each of the parties is to receive a mission calling for the occupation of a certain number of important points, also the hours of departure of the patrols (especially the reconnaissance and "pursuit patrols"). The supply and evacuation services must also be in operation. The exercise should not last too long a time.

Each of the parties should organize his command post (with hospital, rest camp, and supply stores.)

It will be the task of the enemy to find out the set-up and harass the opponent.

The "pursuit" or reconnaissance patrols cannot pass the line "A"-"B" without being covered on both right and left by the "fixed" patrols at the points 1-2-3-4, etc. Therefore, there will be a race at first to seize these different points. In certain cases, those points that are lost should be recaptured by sending two patrols against the said point.

Reduced Pack for Patrols

The successful execution of certain missions at times demands great mobility and speed.

The *complete pack* of our modern infantry tends to be so heavy that it interferes seriously with the accomplishment of a diffcult assignment.

By taking along only those objects which are *indispensable* to the combatant for fighting, nourishment, and shelter for a certain period of time (24 to 48 hours, for example), it is possible to cut the pack down to a reasonable weight (22 to 33 lbs. including arms and ammunition).

Our problem is to make up a simple and practical pack which is well balanced on the back of the man carrying it, making use only of the equipment employed in our army.

In offering the following solution, it seemed well and even necessary to us that both of the carrier's hands should be free for use in skiing or climbing over rocky surfaces with the greatest possible degree of safety.

The only difficulty confronting us was how to attach the gun on the pack so that the man would be best able to bring his weapon into use, fire, and reload with the utmost *speed* and *accuracy*.

However, the solution we offer possesses one disadvantage which is of no great consequence: the soldier is able to fire only in a prone position after having removed his pack. But this disadvantage is compensated by one definite advantage: the weapon possesses an *excellent rest* in any terrain, especially in snow, and the man, out of breath and exhausted by a long climb, is able to fire in a more accurate and surer manner

The pack is very flat and rests uniformly over the *whole* surface of the back. The carbine does not interfere with movements of either the head or legs. The construction of the pack does require, however, a little practice and care if a bad surprise is to be avoided during the course of the journey.

It will be an excellent chance for the sergeant major and the patrol commanders to check the *degree of preparation* of each man: "As the pack is—so is the man."

The tests carried out while training infantry recruits in the winter on military ski patrols were entirely satisfactory from the point of view of the march as well as from the point of view of fire results.

Its Construction

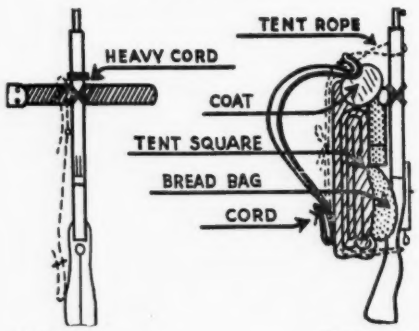


FIGURE 1 FIGURE 2

A. Fasten the carbine and tent case firmly together in the form of a cross with the aid of a strong piece of cord (Figs. 1 and 2).

B. Make up a pack with the 2 shoulder straps of the "mountain bag," the 5 small straps, coat made into a roll, the tent square (containing kindling wood and paper), bread bag (containing a change of shirt, 1 pullover sweater, 1 or 2 pairs of socks, the canteen and a little food), mess tin containing food (bread, Ovos, tea, sugar, cheese, dried fruits). The ammunition (a maximum of 48 cartridges) will be carried in the cartridge cases.

C. Fasten the tent case with the 2 upper straps of the pack. Fasten the carbine firmly to the pack with the tent rope. A slip knot will permit a quick removal of the pack.

The total weight (not including ammunition and food) is:

Mess tin, canteen and bread bag	2.86 lbs.
Tent square	3.08 lbs.
Tent case	1.54 lbs.
Straps, etc.	0.88 lb.
Carbine	9.24 lbs.
Coat	5.28 lbs.
	22.88 lbs.

In certain cases, the patrol will be provided with a snow shovel or engineers' equipment, a first aid kit, repair equipment, ropes, an ice axe, etc., depending on the mission or the terrain.

Use of Automatic Weapons at High Altitudes

Even though we have enumerated all the disadvantages and defects of automatic weapons as compared with the carbine, we wish to return to the subject of their use in certain favorable cases.

The machine gun rifle is extremely useful owing to its mobility and great fire power. It is the ideal weapon for the defense of a command post against surprise attack. It should be used with its *middle support*.

The *heavy machine gun* is able to operate in the cold, provided the jacket is filled with "K.S.D." oil (Deunewil cooling and lubricating oil). The solidifying point of this oil is below zero. This excellent invention permits us to get the best results from the gun at both high and low temperatures (from 250 degrees above to 20 degrees below zero). [Translator's note: If the temperatures given here are Centigrade, as is the case in most European countries, at least, zero would be 32 degrees Fahrenheit, while 250 degrees above and 20 degrees below, zero would be respectively 480 degrees above and 13 degrees below zero Fahrenheit.] Certain precautions must be taken, however, to insure proper performance in extreme cold. The lock must be kept in the pocket (for warmth) as long as possible; only metal belts must be used; lubricate the mechanism very lightly, *grease nothing;* fire but one round at a time to start with before firing series of rounds.

The various weak points of this gun from the tactical standpoint should be borne in

FIGURE 3
RIFLEMAN IN POSITION IN THE SNOW.

FIGURE 4
SKIER WITH REDUCED PACK. NOTE FREEDOM OF MOVEMENT.

FIGURE 5
ARRANGEMENT OF PACK TOP VIEW.

FIGURE 6
BOTTOM VIEW OF PACK CARBINE STOCK BURIED IN SNOW.

mind so as not to expose this valuable weapon needlessly in impossible positions.

Let us remember the weight of the gun, its lact of mobility, its heavy use of ammunition (and difficulties in obtaining fresh supplies), the frequent fogs which hide the enemy from view, and the terrains which lend themselves so poorly to the effective employment of flat trajectory weapons. Let us limit its employment and bring it into action only when favorable conditions exist.

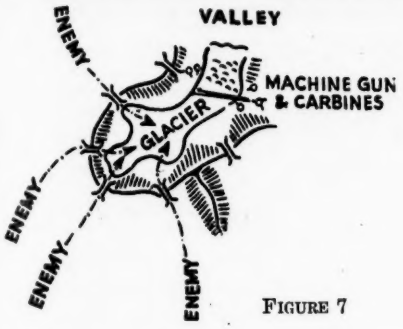


FIGURE 7

The machine gun should have an *open field of fire* permitting the employment of *grazing fire* at ranges varying between 350 and 700 yards. These favorable terrains are rather infrequent at high altitudes; yet they are to be found everywhere in our country in the form of level stretches on glaciers, mountain meadows, a slope at times, or a talus. The tactical part played by favorable terrains is *only a function* of their more or less favorable situation for the evolutions of the enemy.

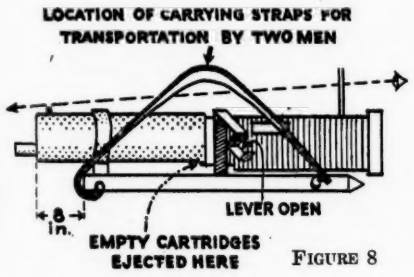


FIGURE 8

Supposing that an enemy has succeeded in forcing a certain number of difficult passages with the aid of several small mountain patrols, he will probably attempt to reorganize his forces lower down and attempt the passage of favorable terrains *by force* and the *employment of speed.* He will attempt surprise action. In such a case, the fire of a few carbines would not suffice, as the density of fire would probably be insufficient. In such a case this carbine fire should be supplemented by the fire of one or two skillfully placed heavy machine guns, *protected* by the rifle fire and hand grenades of the rifle troops. These favorable sectors as well as the firing positions from which the enemy can be best combatted may be easily recognized in advance. These and alternate positions must be prepared, taking into account the varying conditions resulting from darkness, fog, and clear weather.

The machine gun must be very mobile. It can be carried only on the backs of the men or on runners. The tripod will sometimes have to be left behind and little ammunition carried with the gun, but the latter *must be ready immediately when needed.* The opportunities for firing will be rather infrequent; the gun must not be uncovered till the last moment, then it must disappear by changing position quickly.

The principle: "Gun seen, gun lost" is particularly true in the mountains where an automatic weapon is rare, hence especially an object of the enemy's attention.

A It would be a mistake to use the gun without its tripod too commonly in the mountains, for stability and hence also accuracy are reduced when employed in this way.

Mode of Operation

Twist gun on its axis, 90 degrees to the left; push further forward in carrying sling. Close the upper lever only; the other may be fastened by means of a piece of small rope or heavy cord (this lever must be open during firing to permit sighting). The gun in its sling may be carried on the back in normal position or by two men by arranging the carrying straps of the sling as shown in Fig. 8.

B Since January 1937, numerous experiments have been carried out in the matter of winter transportation. We are informed that a standard machine gun toboggan capable of carrying any machine gun with sling has been perfected by the Badan Ski Factory of Bursin. This toboggan has been given many tryouts during the past two winters. It is a good job. (See Figs. 10 and 11.) An article on this subject appeared in the Revue Militaire Suisse of June 1939. This latest model of toboggan permits the gun to be moved while completely covered (camouflaged) with a white cloth. In climbing, it is pulled by one man, or by two if necessary. A single skier is able to handle it during descents.

A second toboggan is required for transportation of the ammunition (750 rounds) and a third for the tripod.

For firing in seated position, the gun is fastened on the three toboggans ready for firing. His comrades shove him into position and he is able to open fire almost instantly.

Owing to the great contact area of the toboggans with the snow, stability is perfect.

FIGURE 9
FIRING WITH MACHINE GUN IN CARRYING SLING (WITHOUT TRIPOD)

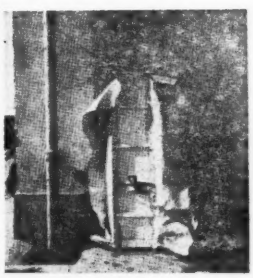


FIGURE 10
MACHINE GUN TOBOGGAN OF WOOD WITH METAL RIBS.

FIGURE 11
FIRING POSITION OF 3 TOBOGGANS, FOR USE WITH MACHINE GUN.

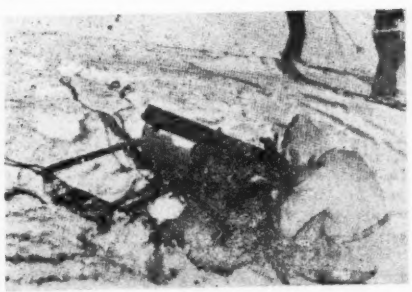


FIGURE 12
MACHINE GUN ON 3 TOBOGGANS ARRANGED FOR FIRE FROM SITTING POSITION.

FIGURE 13
GUN CAMOUFLAGED WITH OLD BED SHEET.

Infantry Fire In High Mountain Terrain.

[By Captain Gallusser, Swiss Army, in *Revue Militaire Suisse*, January 1942. Translated from French at the Command and General Staff School, Fort Leavenworth, Kansas.]

In mountainous sectors where the mountaineer is forced to rely entirely on skis, his ice-axe, and rope for moving about, the carbine is the ideal arm. On account of the ease with which it is operated and its small size and weight, the carbine can be carried anywhere without a great deal of inconvenience. Its simple action permits almost instantaneous opening of fire and it is not in any way affected by the cold. Its firing accuracy is excellent even at distances in excess of three hundred yards, since a gun in good condition and well adjusted possesses extremely slight dispersion in the hands of a good marksman. The maximum consumption of ammunition may be fixed at six rounds per minute, and even this is a bit high. It is not hard, therefore, to maintain a supply of ammunition even in relatively inaccessible locations.

The carbine is truly an individual arm which permits the opening of personal, aimed fire on an adversary who is usually not overly numerous (since we are dealing with high mountain altitudes). This situation permits him to avoid close formations wherever the terrain permits it, and he will attempt to make use of all dead angles.

Camouflage and concealment, silence and waiting will precede the opening of the very brief period of fire. Every shot should find its mark for the reason that any one who escapes will probably not be seen again for a long time, and he may become very dangerous to the "hunter."

Naturally, points will be chosen where the enemy is forced to pass. The opportunity will exist to determine in advance the proper moment for opening fire, the point where the enemy's progress will be slowest and where he will have the least chance of finding good cover.

If the situation permits, a bit of discrete practice will give the exact range to good advantage.

The men select their stations with sufficient separation in depth, altitude, and breadth. In this way a long firing base will be obtained in the most natural manner. The enemy will have a great deal of difficulty in locating different sources of fire, especially where the men are will hidden among the rocks.

Surprise will be complete and results the best with concentration of fire of all the weak weapons both in time and space.

This type of fire cannot be improvised; it requires a great deal of discipline and serious preparation on the part of every one concerned, from the chief of the patrol to the lowest in rank.

The carbine is perfectly suited to aimed, high-angle fire (the opposite of grazing fire). By crossing the trajectories of several weapons, there will not be many dead angles in a given zone (Fig. 1).

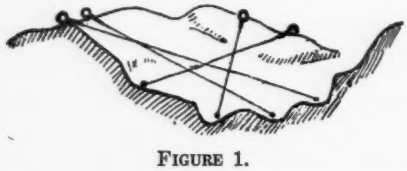


FIGURE 1.

The morale effect of surprise fire coming from several different directions and penetrating into all the angles of a terrain is very great. If, in addition to this, the material effects are considerable as a result of good accuracy, the enemy detachment will have had an experience from which it will not immediately recover.

These are the very results we are aiming at!

The grazing fire of single shots or bursts from automatic weapons, which is so important in flat country, is practically nonexistent in the mountains on account of the nature of the terrain. If by any chance such terrain occurs and is covered by an automatic weapon, the enemy is easily able to avoid it. The opportunity for long range firing will be rather rare, for there will be too many dead

FIGURE 2.

angles, and the enemy will have sufficient opportunity to take cover with the firing of the first shots. Fog will often be an added and serious enemy for the automatic or heavy weapon. The targets which the enemy will present may be few and more or less scattered in a terrain affording a great deal of cover. Therefore, automatic weapons cannot be used effectively. They cannot open fire except at distances which are frequently too short, their positions will be quickly located, and they are likely to be destroyed as they are too heavy to be moved quickly by their crews. Their consumption of ammunition is very great, and transportation constitutes a problem which is not always solved.

Let us compare the normal rates of fire of these weapons:

Weapon	*Nature of Fire*	*Rate of Fire*	*Weight*
Carbine	One round at a time	6 rounds per minute	1 clip, 5.6 ounces
Sub-machine gun	Bursts of 5 to 8 rounds	60 rounds per minute	2 magazines, 5.7 pounds
Machine gun	Bursts of 20 to 30 rounds	250 rounds per minute	1 box ammunition, about 24.2 pounds

The sub-machine gun and machine gun require periods of long and painstaking repair service. Excessively low temperatures render their care still more difficult. To avoid jamming which might be diastrous, the mechanism must be warmed each time it is fired, making instantaneous opening of fire impossible.

The mortar, some of whose shells weigh 7.3 pounds, can be used for certain assignments, but its use is limited by observational possibilities and difficulties of ammunition supply. Our supply of mortars is too small to justify the risk of losing a single one in a sector of minor importance. They will be of use to our troops under certain circumstances, such as for starting avalanches in certain dangerous passages.

In 1938, when practice maneuvers were held in the mountains, a small peak which dominated a very important and unavoidable pass, was the object of contention of the two sides.

The Reds won the race by using a relatively weak but fast mountain patrol (with carbines only). They reached the summit about forty minutes ahead of the Blues.

The latter lost a great deal of time because of the composition of a large advance guard detachment reenforced by a machine-gun section of three pieces carried by pack mules. At the end of three hours' time, the mules had to be abandoned on account of the steep terrain. Time was lost again in changing the guns over from the mules to the men. A little farther along, the head of the column got into the field of fire of the Reds who were already established at their objective.

I was chief of the machine-gun section. We had to open fire with a machine-gun immediately against the summit (at a distance of about a mile!) to indicate the fire (that is to say: make unnecessary noise)! Our most advanced elements must have been about five hundred yards from the Red's patrols at that time.

As we continued our advance, we abandoned two tripods and quite a few boxes of ammunition besides the most fatigued of our men.

I was finally at the head of the Blue detachment with two machine-guns minus their tripods and only about five hundred cartridges. Every one was flat on his stomach among the boulders one hundred yards from the summit where we were covered by the individual fire of a dozen carbines. Our situation was hopeless, for we could not train our guns on any target among the rocks and the Reds had us completely at their mercy.

The umpire made the Reds evacute the summit because the Blues were the strongest and had automatic arms. We had profited by the great injustice done them.

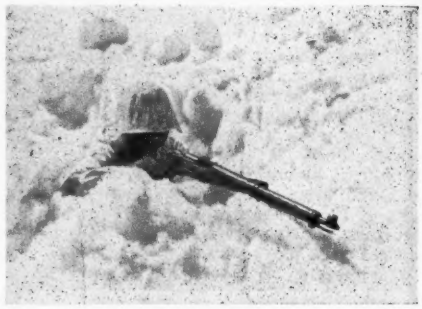


PHOTO NUMBER 1.
Firing-position made in fifteen minutes. Note white uniform.

What we lack is the logical confidence we should have in the carbine. It has suffered, since it is so simple a weapon, in comparisons with those complicated, costly, and modern weapons over which too much fuss is made. We hear praise for these weapons on the great battle fields far from our own country, and we are too often unaware of their weak points to consider, for instance, the effects of the present cold weather in Russia on the oil of the motors and the complicated mechanisms of the weapons.

The lack of confidence in the carbine is accompanied by a lack of interest. The neglect which follows this may result in a great deal

PHOTO NUMBER 2.
Firing on a descending patrol

of damage to the weapon. To cite but a single case, the Finnish infantry has given us certain proof of the value of accurate, rapid, individual fire. This requires a great deal of concentration, will power, and care.

The mountain soldier should be a first-class marksman above every thing else. Whenever he takes part in practice maneuvers, whether in winter or summer, he should be required to prove his ability as a marksman. He should

take much better care of his weapons than he does. His gun should be checked and adjusted regularly so that the familiar "My gun is always out of order; it's worthless!" or "I can't do anything with this blunderbuss!" might never be heard.

Too many carbines have been damaged during practice maneuvers in the mountains. This is frequently a result of the roughness of the conditions (falls on skis, bumping against rocks, etc.) But damaged weapons are also often the result of inexcuseable negligence on the part of their owners. He appears to realize too little how much he owes, or will owe some day, to this incomparable weapon. He bestows loving care on his safety rope or his skis for he knows that his life may depend on their condition.

In mountain service and exercises, we should emphasize individual carbine fire more than we have in the past. It is admitted that mountain soldiers already can shoot. It is certainly necessary.

He must learn to shoot in snow, among rocks, in extreme cold, while wearing mittens, at night, and especially in fog. The targets should be at varying distances, from thirty-five to three hundred, even five hundred yards. He must be able to register hits on visible targets in from five to twenty seconds. In short, no matter what the situation, he should be able to make each shot count. When he has acquired a certain mastery of shooting, he will take up patrol fire under the control of his chief.

Proper employment of fire requires a great deal of discipline and the ability to make correct decisions. If a detachment of twelve enemy skiers, for example, is approaching a canyon, what is the best way to eliminate it with a minimum of cartridges?

The patrol chief has six carbines at his disposal. He must distribute them in such a way as to obtain an advantageous firing base.

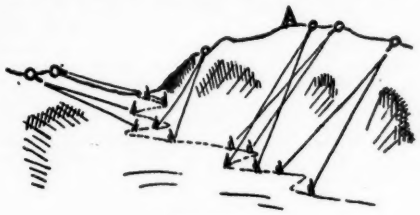


FIGURE 3.

The targets should be divided in advance, between the men. It is necessary first to take care of the most difficult or most important targets (the chief of the detachment, the carriers of automatic weapons or radio outfits). The effort must be made to get the last men in the column first, and the leading ones (the nearest ones, that is) last. (Fig. 3).

The Swiss Mountain Ration

[By Captain Louis Zimmerman, Swiss Army, in *Revue Militaire Suisse*. October 1941. Translated from the French by Major Gustave E. Kidde, Coast Artillery Corps, Instructor at the Command and General Staff School.]

The question of subsistence in the higher altitudes is one requiring the initiation of special studies on the part of the high command.

Troops operating at high altitudes are subjected to considerable physical efforts over and above those usually encountered at normal altitudes. Even under these adverse climatic conditions, units must execute their missions with the same degree of efficiency as their comrades on the lower plains. Mountain troops must be self-contained in the matter of rations and must be able to operate for considerable periods without re-supply. Regarding quarters, they must be able to build their own ice igloos or to find suitable sleeping places in rock, ice or snow caves.

These troops must carry everything necessary for life and combat, including: arms, munitions, rations, extra linen, tentage, sleeping bags, capes, skis and accessories, ice grippers, snow axe, avalanche bugle, rope, waxes, concentrated fuel, fuel, medical supplies, repair kits, surveying equipment, etc.

The above list shows that the pack of any mountain soldier will attain considerable weight, and it is therefore necessary to study the makeup of this load with minute detail in order to permit the soldier to carry the maximum amount of ammunition and weapons and at the same time to assure his being kept in a state of high physical efficiency. It is impossible to reduce his load by eliminating any of his alpine equipment, for any such reductions would increase the rate of casualties due to accidents. The only remaining source for load reduction is the ration; but any reduction of this load cannot be made at the expense of reduced nourishment which would immediately have its repercussion in the health and stamina of the individual soldier. The physical resistance of men depends largely upon the food absorbed during the period immediately preceding the effort and upon the nourishment taken immediately afterwards. Any soldier operating in the high mountains must be able to reconstitute his physical forces within the shortest time in order to be ready for any eventualities of combat that may be thrust upon him.

The following comments are the results of extensive experiments conducted by the 10th Brigade (mtn) of the Swiss Army.

The soldiers taking part in this test were subjected to searching physical examinations all during the period of the test, and experienced mountain medical officers were in charge of this phase of the work. In order to make a competent study of the daily ration as used in the mountains and in order to arrive at conclusions regarding the optimum ration to be used, it is best to break it down into its constituent parts such as bread, meat, cheese, etc.

Bread

This primary element of diet has lost much of its predominance in the ration of our ordinary foot troops. The bread ration was formerly 17 ounces a day and has now been reduced to 13.25 ounces. This reduction has had the effect of reducing bread waste among the troops, since those individual soldiers who desire the full ration may have it on asking and if, in the opinion of the commander, it is really necessary. This necessity is well the case with our mountain troops. The principal disadvantages of white bread are:

1. High freezing temperature.
2. Difficulty in keeping it fresh over extended periods.
3. High water content.

For mountain troops this white bread must be replaced by one more suitable. The rye bread (as baked in the Canton of Valais) has been found eminently suitable; for it has the advantage of low freezing point, long life in edible state, superior nutritive qualities, and its favorable effects on the intestinal tract. A ration of 8.8 ounces a day of this bread is equivalent to 17.6 ounces of white bread. On eating this rye bread ration initially, men frequently complain of stomach ache, but these discomforts disappear as soon as the men learn to masticate properly. In addition it has been found that a little wine helps reduce these complaints. The principal cause for this stomach trouble is improper mastication.

Meat

The army meat ration is 8.8 ounces of fresh or 6.4 ounces of smoked meat per day. As regards the mountain soldier, the question of providing fresh meat regularly is one that cannot be solved. The soldier is more or less self-sufficient, and the assurance of bringing up fresh meat in an unspoiled condition, especially during the summer, is difficult. Also the problems posed by the preparation of fresh meat in the high mountains is hard to solve. Therefore, except when the supply situation permits, it is necessary to substitute dried or smoked meats for the fresh meat component of the ration.

Beef used in dried meats is more plentiful than that used for the manufacture of smoked meat products. The drying of beef has definite advantages, but the main drawbacks are that this process takes special equipment which may or may not be available, and also that the cuts used in drying are not to be selected except from certain quarters. One solution to this problem of drying meat is to prepare beef in the form of "pemican" as used by the Artic explorers. The manufacture of this food does not require selected cuts, is relatively simple and makes no excessive equipment demands. One method is as follows: The fresh beef is cut into small pieces and placed in a large pot in the ratio of three parts of beef to one part of beef fat. The whole is placed over a small fire and allowed to simmer for about three hours. Salt and pepper are added for seasoning, and before cooling, the juice of one lemon is added to each twenty-one pounds of fresh meat. The results thus obtained are in the form of a paste of pleasant taste, rich in fat content, and containing proper vitamins. Further, the conservation in edible state presents no problem. Sometimes dried raisins are added to heighten the taste. One additional advantage in this type of meat preparation is that it utilizes all parts of the animal and does not waste any of the fat. This "pemican" can be eaten raw, made into a soup or into a rice stew, or used as a sandwich spread. The daily ration of this is 5.3 ounces, and this is actually equivalent to a fresh meat component of 10.6 ounces a day. The lengthy cooking over a slow fire gives a product whose weight has been reduced by thirty per cent through dehydration. The increased cost of this meat component is more than compensated for by this weight reduction. In the preparation of the daily menus it is well to introduce as much variety as possible by alternating smoked meats with this "pemican" in order to keep the men from becoming fed up with one kind of meat. As an occasional variation in the meat component, a few sausages can be included. These should be smoked and dried and not too well spiced. Tinned meat pastes are to be avoided as they have too much dead weight.

Cheese

Cheese is a particularly useful food for operations in the mountains. It is very popular with the men, has excellent nutritive characteristics, offers no problem as regards transport and is very stable under average mountain conditions. The minimum cheese ration is 2.5 ounces a day. The form is boxed cheese.

Oatmeal

Oatmeal has largely replaced the chocolate component of the ration. Tests have proven conclusively that the latter has small nutritive value in comparison to the weight. Also it has been found that chocolate digests with difficulty at high altitudes and that it weights the stomach and often causes severe stomach ache. The oatmeal is prepared in the usual manner. To vary the monotony of this dish it is well to add dried raisins, jam, honey, or lemons to the porridge from time to time. The addition of lemon will provide the necessary

anti-scurvy vitamins. This oatmeal dish is very good for providing energy required for sustained effort. The porridge should be made thick, and tea is provided as the beverage. Our experience shows that mountain patrols have gone from four in the morning until noon on one dish of porridge and have executed lengthy patrols under adverse conditions during that time without any deleterious physical results.

Ovomaltine

Military ovomaltine is one of the most useful foods for troops operating at high altitudes. It constitutes the major portion of our reserve ration. It is composed of milk, eggs, malt extract, cacao, and sugar, and this concentrated food is a meal in itself. However, this food is far from unpleasant to eat and is frequently misused by the soldier. These misuses are:

(a) addition of boiling water;

(b) useless addition of whole or condensed milk);

(c) dilution in excessive amount of water.

This reserve component is very expensive, and to get the most out of its use the following procedure must be followed: dissolve the tablets in water of not more than 150 degrees F., and do not add any milk or sugar. One package of tablets is enough to make one pint of liquid. In addition to taking this ovomaltine in liquid form, the tablets can be eaten dry and taste exactly like malted milk tablets. This concentrated food is most easily and rapidly digested and has been found an excellent restorative for energy lost during sudden and excessive bursts of physical exertion. Ovomaltine contains the principal nutritive elements, namely: carbohydrates, albumin, fats and salts, and vitamins. As a result, this substance can provide necessary nourishment for considerable periods of time when used alone. However, the cost of this component is some eight times that of an equivalent meal of oatmeal and bread and therefore must be used sparingly and only when authorized by the senior commander on the spot. Just because it is a superior food does not justify its daily use. Once a sealed packet is opened it must be consumed without delay otherwise it will lose many of its excellent properties through absorption of water.

Tea

Black or green teas are very good, but it has been found that tea made from mint leaves offers the best means to keep thirst down. In addition it is most important to have all troops thoroughly familiar with those mountain herbs that are susceptible to brewing into palatable beverages. Each soldier should be equipped with a canteen (thermos). It has been found that a man leaving in the morning with a canteen of tea of drinking strength will soon empty it. Therefore the tea used to fill the canteen before leaving bivouac should be several times the strength of the potable beverage. To dilute it, use is made of any mountain streams that are encountered en route. Excessive sugar is to be avoided.

Dried Prunes

These fruits are excellent from the point of view of nourishment and weight, moreover, they can be used to combat thirst. This latter is accomplished by having the men retain a pit in their mouth, thereby keeping the salivary glands in action.

Butter

This element is an important component of the ration for the high altitude soldier, and its use is limited by price considerations. However, its heat producing value is so great that when operating at low temperatures it must be included in the daily ration. A minimum of one ounce a day is required under such conditions. Butter is used to make sandwiches with the rye bread carried.

Rice

The volume of this substance and its small weight per unit consumed make it an excellent component of the mountain ration. It is most frequently used to make stew with the meat component. Dishes containing rice are usually prepared with the evening meal as they give heat to the body to withstand the rigors of the night.)

Potatoes

These cannot be used in their natural state because their transport means carrying too much useless water. Dried potatoes weigh one seventh of the natural article and are easily carried and prepared, it being only necessary to add water during cooking. They are often included in the stew and do not spoil readily.

Eggs

Eggs cannot be used because of their fragility, and egg powders are not a suitable substitute.

Fresh Fruits

The question of supplying vitamins in adequate numbers to the troops can be partially solved by providing enough fresh fruits. Care must be excerised to select those that keep best such as apples, oranges, or lemons.

Dried Fruits

In addition to fresh fruits, which are not always obtainable, dried fruits should be provided. These in addition to the dried prunes mentioned above can include raisins, apricots, peaches, pears, figs, and dates.

Green Vegetables

The question of continuity of supply is not to be expected for troops operating in mountainous terrain; therefore, the supply of fresh vegetables will not be possible except in base camps and stable situations, if and when the latter exist. If possible it is wise to provide any units going off on independent missions away from their supply trains with a sufficiency of lettuce so that the men can have green salads during the initial period of their operations. For the time following the exhaustion of these greens, care must be taken in educating the troops to instruct them in the selection of wild mountain herbs that lend themselves to salad making. These can include dandelions, water cress, wild rhubarb, and many others. Each soldier should carry a small bottle of salad dressing as part of his pack.

Miscellaneous

Cube sugar is a useful food for eating on the march to give added energy and should be provided for each soldier.

A special paste made of soybeans and tomatoes has been developed for the mountain units. This material is rich in vitamins, carbohydrates, and fats and has small weight in comparison to its nutritive value.

Powered milk is an absolute essential for mountain operations. This is supplied with vitamin G-3 added to give protection against frostbite.

Alcohol in any form is more harmful than good for mountain operations when considered from the nutritive standpoint. The attached medical officer or aid man should carry a small amount in the form of whiskey or brandy, but this should be only administered in certain cases calling for a stimulant to the circulatory system.

The following menu is one designed to feed a patrol operating in the high mountains for a period of five days. Its cost is approximately that of the ration in general use in the army. However, the total weight has been reduced from one hundred ten pounds to sixty-nine pounds for a squad of eight men. This reduction represents an increase of seven hundred rounds of small arms ammunition that can be carried. This menu will keep the men in excellent physical condition and is well adapted to the special conditions arising from considerations of terrain and life at high altitudes.

Menu

This menu is for a patrol operating at an altitude of ten thousand to thirteen thousand feet.

(FIRST DAY)

(Leave 4:00 AM, Full Pack, Bivouac 4:00 PM in Igloo)

Breakfast	*Morning Meal*	*Noon Meal*	*Evening Meal*
Rye bread	Rye bread	Rye bread	Rye bread
Oatmeal with raisins	10 dried prunes	3.5 ounces cheese	Stew
	Tea	2 apples	Salad
		1 box soy bean tomato paste per 2 men	

SECOND DAY

(Leave 4:00 AM, Full Pack, Bivouac 6:00 PM in Igloo)

Rye bread	Rye bread	Rye bread	Rye bread
Oatmeal	Strong tea	3.5 ounces lard	Pemican
	1 Ovomaltine	Smoked meat	rice stew
		1 apple	

THIRD DAY

(Leave 3:00 AM, Full Pack, Bivouac 6:00 PM in Igloo)

Rye bread	Rye bread	Rye bread	Rye bread
Weak tea	Tea	3 butter and	Pemican
Oatmeal with sugar	Soy bean tomato paste	honey sandwiches	bouillon
		1 lemon	Baked potato
			1.8 ounces cheese

FOURTH DAY

(Leave 5:00 AM, Full Pack, Bivouac 5:00 PM in a Cabin)

Rye bread	Rye bread	Rye bread	Rye bread
Oatmeal with honey	2.8 ounces cheese	3.5 ounces lard	Rice soup
	1 lemon	10 dried prunes	Stew
	Tea	1 Ovomaltine	Cress salad

FIFTH DAY

(Leave 4:00 AM, Light Pack, Bivouac 8:00 PM at Base Camp)

Rye bread	Rye bread	Rye bread	Rye bread
Oatmeal with dried apricots	1.8 ounces raisins	3.5 ounces pemican	Canned soup
	Strong tea	2 apples	Potato salad
	Soy bean tomato paste	2 butter and honey sandwiches	Smoked sausage

On returning to base camp, the first meal this detachment will receive will be composed of fresh meat, preferably very rare, fresh milk, and fresh vegetables.

To cook the above menus, the individual soldier carries with him small concentrated alcohol briquettes which are useful as fuel in all cases where there is none available locally. These briquettes are used in special stoves designed for them, and although the whole apparatus is very light, it is uneconmical from the point of view of fuel efficiency. Bottled gas cook stoves are preferable, but these are too delicate. In order to avoid any bad physiological effects from using these concentrated fuels, it is preferable to use the stoves in the open rather than inside an igloo or cabin.

Mess Discipline

Survival in the mountains requires a very high order of discipline along all lines, and eating discipline is one of the foremost necessities for any unit that expects to be able to accomplish its assigned missions. Poor mess discipline will result in unequal distribution of the rations and may also result in men falling sick, thereby requiring attention and diverting others of their comrades from their regularly assigned duties, as all care of non-walking sick and wounded devolves upon the unit itself since no attached medical troops accompany it on its marches. Eating without authorization is absolutely forbidden, and all detachment commanders must be on the alert to stop irresponsible eating on the part of members of the command. On leaving the base camp, the detachment commander will receive a menu when his unit draws it rations. This menu will include, in addition to the detailed information of the meal compositions, an exact account of what food is carried by each man. The evening meal will be the

main meal of the day and will only be prepared upon receipt of a direct order from the unit or detachment commander. If possible, all meals will be prepared in squad batches under supervision of the squad commander and the division of the meal will be made under his guidance.

The quartermaster charged with providing the subsistence for the mountain troops has a serious responsibility in insuring the availability of proper foods in proper amounts, for in high altitudes a lack of subsistence or the presence of unsuited rations will have a damaging effect on the health and morale of the units so affected. Such a situation might result in their failure to accomplish the assigned mission, since the question of personal physical endurance plays such an important and basic role in successful mountain operations.

Night Attack In the Mountains.

[By N. Biyazi in *Voyenniy Vyestnik*, April 1940. Translated from the Russian and condensed at the Command and General Staff School, Fort Leavenworth, Kansas.]

Night operations in the mountains present the greatest difficulties. However, night can be a faithful helper to stable, bold and well trained forces. In the mountains the night attack produces exceptional effect.

Among the difficulties attending night operations in the mountains one must include poor visibility, exceptional difficulty of orientation, and in following through to the designated objective amidst the varied and complicated mountain terrain, the inconvenience of maintaining cooperation between units and the various arms, the possibility of confusion among (even firing on) one's own units due to the difficulties of recognizing them.

At night the impressionability of troops increases; in unstable troops there appears the feeling of fear (night brings on the fear of the unknown) which sometimes causes panic and precipitates flights. Personnel tires more quickly, the human organism becomes weak towards the day's end and is overcome by sleep, movements become slow and exact more energy than during the day.

During night operations in the mountains the hardships of maintaining control and liaison are considerably increased and bringing up into combat of second echelons, and reserves is rendered difficult. As a rule, the execution of a complicated maneuver should be eliminated in night operations.

Sound and light diffuse as distances become greater at night.

Night flights of aviation in the mountains are difficult due to complicated orientation, and in high mountain regions, due to the sharp relief.

At night, tanks (if the terrain permits their use) must reduce speed to one-half or one-third; they have greater difficulty than in daytime in overcoming obstacles; accidents are more frequent. Fatigue on the part of tank crews causes them to lose direction.

Firing is more complicated in the mountains during the night, and its effectiveness is reduced.

Advantages of Night Attack

However, night attacks have a number of advantages.

It is easier to maintain the element of surprise under the cover of night because concealment of movement is rendered much more simple. A well organized attack with even light forces against a numerically superior enemy can bring success. At night it is frequently possible to capture fortifications which it is impossible to take in the daytime. Bold, sudden attack increases the effect of moral shock on the enemy.

The expenditure of ammunition is much smaller during night combat, which is very important in the mountains due to transportation difficulties.

During darkness the enemy will have difficulty in ascertaining the direction of the attacker's main action. Losses caused by enemy fire are reduced and the activity of his technical weapons, particularly aviation, is weakened.

Night attacks may be employed in the following instances:

(a) in order to crush resistance where the enemy enjoys numerical superiority in a given locality, possesses superior technical weapons, or occupies a more advantageous position;

(b) in order to capture a position of strategic importance to the development of the engagement during the day;

(c) in order to execute a sudden attack, when the enemy is resting after the day's engagement and is under the impression that the attack has ended;

(d) in order to break up the night attack being prepared by the enemy; in this case the attack should be executed during the early night;

(e) in order to develop the success attained during the day, without allowing the enemy to break off combat under the cover of darkness or to dig in and bring up reinforcements; there are possible instances of pursuing the enemy at night;

(f) in order to mislead the enemy regarding the nature of one's own operations (for instance, when intending to break off contact with the enemy).

Night attack may also be undertaken with a limited objective in view—to capture prisoners from whom to obtain information.

Night attack may take place by two methods—with or without artillery preparation. The latter method is preferred because it assures the element of suddenness, which is the most important factor in a night attack. For this same reason it is not advisable to employ demonstratory action on neighboring sectors because these will cause the enemy to be vigilant during the night along the entire front.

Another important thing is to get the enemy accustomed to frequent night raids for limited objectives only. His vigilance will consequently slacken, while systematic night raids will produce thorough familiarity with the terrain. This, of course, is possible only during a lengthy sojourn in one region.

The night attack should be most carefully prepared. Principal attention should be given to the secrecy of preparations, the thorough orientation of commanders of all units, the precise determination of objectives and purposes of the attack and, finally, to the measures of concealing the offensive, the organization of liaison and of firm command control.

Simplicity of Plan Is Important

The plan for a night attack should be distinguished by its simplicity and should be worked out in the daytime. All the instructions to unit commanders should be given during daylight, not less than one and a half hours before darkness, and on the terrain. Orientation points, the direction and objectives of attack, the nature of passages and approaches leading to the objectives are to be pointed out with precision, and the positions which various units are to reach are to be clearly determined. The regulation of advance and the cooperation between units is performed in accordance with the various stages of the advance.

As has been already pointed out, the element of surprise is achieved, first, through the preservation of secrecy of preparations for the night attack and, secondly, through the maintenance of silence during the attack. Conversations, smoking, and the use of fire and light signals are strictly forbidden. All equipment is adjusted very tightly and all possibilities of any noise are carefully eliminated. The hoofs of pack animals should be wrapped, non-rubber wheels on guns should also be wrapped, rifles are to be loaded with ammunition confined to magazines, with no rounds in the firing chamber; in the case of individual units rifles may have to remain unloaded.

The step is to be cautious and noiseless; during the movement, stone covered places are to be avoided because the noise of falling stones and slides may reveal the presence of advancing troops. Open crossing of mountain tops is also to be avoided because the outlines of human figures may be visible against the background of the sky even at night, especially in moonlight.

The most important thing is the discipline of movement and precise following of the selected route. The latter is attained through thorough advance study of the terrain, placing of artificial orientation points, beacons and road markers, and movement by compass (azimuth). The best method, however, is to employ trustworthy guides from among local inhabitants, who are thoroughly familiar with every feature of the terrain.

All formations should be drawn nearer together, close liaison between units should be maintained, which, in turn, will contribute towards the preservation of proper direction of movement. One of the sub-units in each company column is designated as leader. There should be file-closers in rear of every sub-unit who will keep a tight hand on stragglers. Machine guns and individual field guns proceed between units of the first and second regimental echelons. Part of the artillery proceeds with the infantry, while the rest remains stationary for action against enemy searchlights, in the event they should uncover the advancing infantry, and for action against enemy artillery, should the latter open fire against the infantry. Infantry unit commanders (principally battalion commanders) should make arrangements in daytime with commanders of their supporting artillery. Through such personal conference all questions are adjusted and the necessary instructions are given.

It is imperative to remember that in the majority of cases night action in the mountains is fully conducive to the employment of means of chemical warfare. Smoke screens can not only impair the effectiveness of enemy searchlights, but in places they can also put a stop to their use.

Maneuver Should Not Be Complicated

The attack should be executed without a complicated maneuver. The essence of the night attack boils down to the calm, assured, and possibly the speediest approach of enemy positions.

Scouts and security units should silently dispose of enemy reconnaissance and eliminate his combat security. Patrols of circular security advance at one hundred to one hundred fifty yards (maximum) from the protected units. Reconnaissance patrols advance at the same interval.

Method of attack is preponderantly along peak (ranges, ridges). Movement along valleys is not recommended even at night because of obstacles which the enemy will erect in defiles (chemical land mines, mine fields, contamination by persistent chemical agents, etc.), to say nothing of the possibility of meeting artillery fire, sometimes with chemical ammunition. All of the obstacles encountered should be circumvented from the flank. Special units are designated for the task of destroying obstacles.

During the advance the possibility of being illuminated by enemy searchlights or illuminating shells should be taken into account. While in open terrain at night, it is necessary to stop and fall to the ground at the appearance of a searchlight ray; in the mountains well trained troops can continue their advance, skillfully using shadowed mountain sides and other terrain features.

As the units reach the designated objectives silently and speedily, they should, in spite of illumination and fire, decisively attack the enemy with the bayonet without any shouts of "hurrah." After the capture of a position it is necessary immediately to dispatch patrols forward and to the flanks, restore liaison with the commander, report to him the execution of the mission, bring the unit to order, dig in to meet the eventuality of counterattack, establish liaison with the neighboring unit, and only then—if this was indicated—continue the execution of the problem.

During the night attack, bringing the second echelon into combat represents a complicated maneuver because of the necessity of moving it up from behind the flank in order to avoid intermingling and confusion between units. If the second echelon has moved forward and the enemy initiates a counterattack against units of the first echelon which has already occupied a number of objectives, then the units of the first echelon should repel the counterattack with the bayonet and grenade, avoiding fire in order not to inflict casualties on friendly forces in front, which are engaged in attacking objectives in the enemy rear.

After a successful night attack it is usually unnecessary to stop and consolidate the captured territory. At daybreak the success will be continued with fresh forces, this time powerfully reinforced by aviation and artillery, and where terrain permits, also by tanks.

The plan of the senior commander should anticipate the nature of action to be undertaken by the units after capture of the designated objectives.

Some Historical Examples

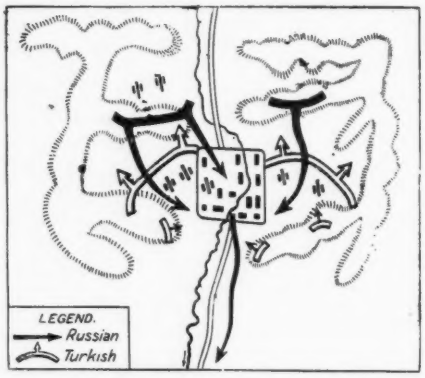
History of the military art provides many examples of successful night attacks in the mountains. Particularly it is possible to point to the decisive and successful action of Russian forces during the sudden night attack, on 20 October 1812, undertaken by the Russians against the Abbas-Mirza's army which outnumbered the Russians fifteen to one and which was preparing a bold invasion of Transcaucasia. During the night attack at the Aslandusky ford over the Araks river, the army of Abbas-Mirza was routed and fled to Tabriz. A second example is the successful Russian attack on the fortress of Kars in November 1877, when the Russian trophies consisted of 17,000 prisoners (including five generals and eight hundred officers), three hundred field guns, and great stores of supplies.

In conclusion we shall quote one more example, appearing in print for the first time.

In February 1916 in Eastern Anatolia there was still snow on the ground and cold weather prevailed, while in Mesopotamia it was already warm. The route of the Russian forces to Mesopotamia was blocked by the city of Bitlis, surrounded by high mountain ranges. A Turkish infantry division, after exhausting retreat battles and a sixty mile retirement, arrived in Bitlis, camped therein, and having fortified the city, prepared for defense. The division had ten to fifteen guns (howitzers and cannon) and machine guns. The terrain was favorable to strong defense; the road traversed over a narrow valley surrounded by wild mountain peaks. In addition to this, at a distance of about a half day's march (some 8 miles away), another Turkish division was bivouacked for the night.

Russian forces consisted of the 6th and 8th Caucasian Rifle regiments with reinforcing artillery, but due to deep snow and difficulties of mountain transportation, only two guns could be brought into action. The Russians also had the Poltavsky regiment of the 1st Kuban Division and units of the 2nd Armenian Division. All these forces were under the commander of the 2nd Caucasian Cossack Division.

For two days the Russians tried to capture the city by attacking in daytime and attempting to outflank the enemy. But because of the failure of these attempts it was decided to execute a night attack.



The attack began shortly before daybreak and was executed in three columns. At the head of the attacking forces advanced the first wave (echelon) of infantry, behind it the second, followed by cavalry, and finally, by the guns.

The result of the night attack was stunning. The Turkish positions were captured with one blow; prisoners and machine guns were taken. After the breakthrough, the Russians immediately placed machine guns on mountain peaks and began to fire on the enemy.

Shortly after this the enemy artillery was captured and the city fell. The fresh Turkish division resting up within half-day's march did not participate in the battle, probably being impressed by the success of the sudden Russian night attack.

After the capture of the city, already after daybreak, the Russians undertook pursuit employing cavalry for this purpose, which was driving the enemy to a distance of ten to twelve miles. The road to Mesopotamia was open.

Night Combat.

[An article by Lieutenant van Muyden in *Revue Militaire Suisse*, February 1942. Translated from the French at the Command and General Staff School, Fort Leavenworth, Kansas.]

I. Importance.

In case of war, the superiority of an adversary in the air, although his activities would be less effective due to the natural obstacles presented by our country, would be great enough to hamper troop movements considerably during the day. We should, therefore, be forced to make important troop movements at night. Also, it is well understood that our lack of tanks will prevent us from maintaining the initiative in open terrain during day time. Here also enemy superiority in equipment would hamper our movements.

We should have but one indisputable advantage: familiarity with our own terrain. But if the enemy is better armed than we and has more experience in war, our advantage will count only at night. At night, in fact, even the best maps and information cannot replace the semi-instinctive acquaintance with the terrain which comes from experience. This is so manifest a truth that it often is not accorded the importance it merits.

A profound knowledge of the methods of night fighting is therefore indispensable. It will enable us to accomplish troop movements at night with a minimum of casualties. It will permit us to strike the enemy's supply lines, to disrupt his lines of communication, to retake defense elements which have been seized by the enemy, to annihilate elements belonging to the enemy—especially tanks—which have penetrated our defenses during the day, to carry out demolitions, etc. It will enable us to affect the enemy morale, even though immediate results may not be apparent. Nothing is more demoralizing to a body of soldiers exhausted by a day's fighting than to have their sleep constantly broken.

A German Opinion of Night Attack in a Certain Case.

"Meanwhile, the darkness has become almost complete, and it is not easy to carry out orders relative to arranging security so that it will be really such and guarantee rest for the troops who are sleeping back of us.

"If the French should counterattack with the energy born of despair and succeed in breaking through our lines, all the successes and sacrifices of the day would have been in vain. We had, therefore, formed a barrier with the tanks at the highway, and the small remaining group of the detachment was able to lie down and sleep."—(Jungenfeld: *So Kämpften Panzer*, Belgium, 1940.)

II. Characteristics.

In questions of a military nature, as in other fields, it is dangerous to attempt to make general rules. One should consider specific cases only. Nevertheless, it is possible to say that darkness renders a large scale offensive action very difficult and costly, especially when the assailant is not acquainted with the terrain and the defenders have had time to organize their defenses, which is the case with us.

It deprives the attacking side of two of his most valuable helps. On the one hand, it renders the employment of tanks almost impossible due to lack of visibility. On the other, it renders the intervention of "flying artillery" (assault aviation and dive bombers) very difficult, and it is this which gives modern attacks their great force. As for artillery, it cannot be used except in prepared fire, the poor visibility rendering all attempts at fire adjustment at night very hazardous. Zone fire is still possible, as is bombing by aviation where flares or incendiary bombs are used to light up the target. However, any such efforts to assist the infantry are of little use unless the latter is close to an object easily visible from the air and which can be used as a reference point.

Hence, the infantry attacks with no other protection than that afforded by its own weapons (infantry cannon, mine throwers) which can help at short range. Its advance is complicated by the fact that contact by vision, essential for coordination of efforts, is not possible in the dark. The infantry must attack, therefore, with the same armament as that of an adversary who has the advantage of being acquainted with the terrain and of having had the opportunity to organize his defense. The enemy also suffers from the disadvantage of being

obliged to shift his position. After dark, hearing takes the place of sight: men must be able to "see with their ears." This situation is to the advantage of the defender, who remains in the same place and listens.

Let us examine the situation with regard to the defenders. Night reduces considerably the effectiveness of flat trajectory weapons which, by definition, can fire on only what can be seen and thus lose a great part of their usefulness. For the infantry, the weapons which retain their value intact are side arms, flame throwers, and grenades. The last, with its relatively wide effective radius, provides a means for putting the adversary *hors de combat* without even having seen him, provided he has been heard. Also, as compared with the rifle and flame thrower, it has the advantage of not revealing the whereabouts of the one employing it. Night transforms the terrain by covering it with a veil of darkness which increases greatly the chances for advance by infantry and renders surprises easier provided the advance be silent, an impossibility except in the case of small units. It diminishes the value of artificial obstructions which can be cut, torn down, or destroyed, unless they are guarded too closely.

Darkness also produces an important psychological effect: by shutting him off from his neighbors, it puts every man "on his own," giving him a feeling of loneliness which stimulates his imagination and which it is hard for him to endure even though he may know that he has a comrade ten yards away. He feels this particularly if he is idle, which is the situation when on the defensive. We all have witnessed a false alarm in night exercises when some nervous sentinel has mistaken a cow or a shadow for the enemy.

All this tends to diminish the invulnerability of the defenses at a given point, it requires a larger force of men to stop the enemy at night than by day. Instead of sweeping the terrain with fire, it should be held by men; and this is not always possible if the men require rest. This means that only the most important points will be occupied and the rest left to the patrols for surveillance.

In addition to this, darkness causes confusion, by making it hard to distinguish between friend and foe. It gives a small unit, which keeps well together in order to avoid confusion, the ability to best a much larger enemy group. (For example, during the Finnish war, Finnish patrols of the strength of a "group" got the upper hand of whole companies of Russians.) But if the attacking troops fail to remain together, and if in the confusion, the combat degenerates into a wild hand to hand encounter, it assumes an especially murderous character for both sides.

Summarizing, if night time does not lend itself to mass operations either for aggressors or defenders, it does create ideal conditions for offensive operations against limited objectives with limited forces; and the surprise attack is the classical type. Night combat represents, perhaps, the only way of retaining the initiative in the face of superior enemy equipment, use of which would place us at a disadvantage during the day.

III. General.

Night fighting cannot be improvised. It not only must be learned, but also must be constantly practiced, its characteristics being such that it requires a very great deal of training. Darkness is a two-edged weapon, so to speak, and in common with the terrain, it can be turned to the greatest profit by the one who knows best how to use it; but there is a chance of its working to the disadvantage of the one not used to it. It is obvious that all men are not equally fitted for this work and that in this case, the same as in close-range fighting, specialists must be utilized for carrying out surprise attacks, etc. But it is indispensable that all understand night fighting and train for it.

It is not enough, therefore, to have one night exercise in each training period, something like final fireworks. There should be at least one practical lesson a week besides the regular training exercises.

To be really complete, night combat training ought to be carried out in two forms:

(1) A very short period of preparation for night combat, which might be termed the study of technique of night combat.

(2) Intensive study, after night, of the possibilities of the sector where one is to be called to fight and this from the point of view of attack and defense.

IV. Technique of Night Combat.

Part of the preparatory exercises for night combat are the same as those for the regular training of patrols. They may be performed in day time. But this is hardly to be recommended except for introductory exercises, as the conditions obtaining in the day time are too different from those of night.

Since we are considering a form of combat where abilities and capacites of personnel are put to a severe test, even the introductory exercises should not be formal. Particularly is it important not to repeat an exercise several times in the same form and in the same place when the desired result has been attained.

Preliminary exercises: Examples drawn from accounts of combatants in the present or last war illustrate the importance of certain lessons.

First, choose one of the men and use him to illustrate various points. Then pass to the next stage, which consists of putting the lesson into practice.

1. Exercise To Teach Movement Without Noise.

Demonstration of the noise made by various articles of equipment during the march (bayonets, clips in the cartridge belt, noise made by hob-nail shoes on stones, in dry brush, in leaves, etc.); then methods permitting their elimination (by wrapping strip of cloth or a handkerchief around a bayonet, the wearing of special shoes or shoe coverings to get rid of the noise of the nails (they may be covered with old socks or wrapped with cloth). Demonstration of the practices to be observed in night marching: choice of terrain (avoidance of stopping when silhouetted against the sky or a light-colored zone against which the silhouette would stand out, the avoidance of hill tops).

When close to the enemy: learn to advance with long steps for listening.

The Importance of Silent Progress.

"Here we are in the very center of the wire entanglements. The barbed-wire surrounds us like a spider web. Suddenly the French sentinel on our left shows signs of uneasiness. He clears his throat and coughs several times. We wonder if it is on account of fear. We wonder if he has heard something. If he should throw a hand grenade into the ditch, it would be all up with us. Caught as we are in the wire entanglements, we are not able to move, much less defends ourselves.

We hold our breath. The anxious moments slowly pass.

When the sentinel has finally become quiet, I withdraw my reconnaissance patrol. In the meanwhile, the darkness has become complete. As we crawled on our stomachs through the rough underbrush, we cause a few branches to break. At this sound, the enemy arouses his whole garrison and for many minutes sends a hail of machine gun and rifle bullets onto the terrain between the two positions. Pinned to the ground, the hail of projectiles passes over our heads. We then regain our positions without a scratch." (Colonel Rommel, "Infanterie Greift an," P. 111, *Stosstrupp-unternehmen Latschenkopfe* War of 1914-1918.)

2. Exercises Teaching Men to See With Their Ears.

Learn to recognize the different noises made by armament and equipment. (See under 1).

Determine the direction from which a sound comes.

Be able to estimate the distance from which a sound comes.

The Importance of Hearing.

"What will night bring us? We try to memorize each tree and bush in front of our positions to avoid seeing "ghosts" at night. The rain begins to fall, first in scattered drops, then in a steady downpour; the darkness becomes complete. Our eyes are no longer of any use; we are forced to rely on hearing alone. On account of the rain, it requires great effort to distinguish one sound from another. Eighty yards at the most separate us from the enemy; in places the holes are not more than fifty yards apart with no obstacles between them." *(Militärwissenschaftliches Wochenblatt,* Heft 2/ 1940. P. 158.)

"Seeing With Ears."

"A French unit has received orders to defend two narrow bridges which are approached by two roads in bad state of repair. On the right bank of the river from where the enemy will approach, the woods extend to the river. As evening comes, a long German column is seen crossing a clearing, and seemingly heading for the bridge.

By listening attentively, the distant sound of motor vehicles, weapons, and commands shouted in German could be heard coming from the direction of the farm. Motionless, scarcely breathing, avoiding the least noise, the troopers hidden on the bank of the river listen.

"Darkness is now almost complete. Close to the bridge, Corporal Henneguier and Troopers Gimpel and Bruère peer into the growing darkness from which the disquieting sounds are coming. Second Lieutenant de Nedde immediately decides to send a reconnaissance detachment to the bridge itself to learn what is going on.

"They advance slowly accompanied by Corporal Henneguier and Trooper Gimpel. All three reach the bridge and stop to listen. Gimpel has taken along his gourd of cognac and his sub-machine gun. Suddenly he turns toward the lieutenant and says in a slightly drawling voice: 'Lieutenant, I believe I see them.' And sure enough, at the other end of the bridge two Germans were busily engaged in removing the mines which had been placed on the structure.

"Solemnly taking his gourd of cognac, Gimpel takes a swallow, then deliberately resting his sub-machine gun on the parapet of the bridge, and without making the least noise, he aims it at the two men working in the dark, and fires.

"Cries of pain are heard. . . . " (Antoine, *Memorial de France,* P 137. French Campaign, 1940.)

3. Exercises To Give the Men Certain Special Instructions.

a. Exercises in night orientation; working with the compass.

b. Studies in liaison: By sight, hearing, special means: lamps with very weak sources of illumination, electric lamp with reflector and shielded by pasteboard with a pin hole. Blue or green lamps, phosphorescent sources on the back. By coordination of time (schedule).

c. Know how to use a grenade in the dark; study holds and the most appropriate methods of hand-to-hand combat; cutting barbed wire obstacles silently; finding a telephone cable in the dark.

Use of the Grenade to Supplement a Jammed Sub-Machine Gun.

"Suddenly their sub-machine gun jams. Immediately the fire of the enemy doubles.

Other shadowy forms rush onto the bridge.

"But Sergeant Muzzoli and Trooper Bruère, who are a few meters behind Gimpel, hurl grenades onto the bridge. There are two explosions and new cries of pain; then the commands in German. . . ." (Antoine, *Memorial de France*, P. 127. 1940.)

Operations With the Grenade.

"The enemy now attempts to ford the river between the two bridges.

"Second Lieutenant de Nedde runs to the threatened point. Less than three yards away a pistol shot rings out in the dark and a bullet grazes his face.

"Several Germans have succeeded in crossing and are hidden in the brush along the river bank.

"The French officer seizes a grenade and hurles it into the brush from which the shot had come. There is an explosion, then cries, then all is quiet." (Antoine, *Memorial de France*, P. 127, 1940.)

Use of the Grenade Assisted by Light Rockets.

"We had no desire to let the enemy throw hand grenades into our holes from a distance of thirty yards. Hence, I crawl out of my hole with grenades which I place within reach. With my rocket pistol in my right hand, I flatten myself against the ground and listen. My eyes search the darkness, but it is impossible to distinguish anything. Suddenly I again hear some suspicious noises; my finger tightens on the trigger of the pistol. Should I fire or not? That was the question. If it turned out to be nothing, the results at least would be embarrassing.

"But I now distinctly hear something. It is not an hallucination, then. My light rocket mounts diagonally, lighting up the forest. With a grenade all ready in my hand, I examine the trees and bushes ahead of me. Over there, behind a tree, twenty or thirty yards from me, something moves. My grenade is already on its way when the machine gun which is on my right and has also caught sight of the enemy, fires a few bursts. I rise to my feet and throw four grenades in rapid succession, the riflemen on my right fire with tracer bullets. Then the light of the rocket dies out and the darkness closes in again. I flatten myself on the ground and listen. Things might have turned out badly. It was only two days before that one of our predecessors was taken out of this hole with his legs torn off."

Militärwissenschaftliches Wochenblatt, P. 158: Auf Gefechtsvorposten, Vol. 2, 1940.)

Cutting Barbed-Wire Entanglements Without Noise.

"We have reached the first obstacle. We begin a difficult piece of work. One of us wraps a rag around each wire before applying the wire cutters. The other men take the strain off of the wires before we begin slowly to cut it. Both ends of the wire must be held as it is cut and bent back cautiously. Everything must be done to avoid a sudden slackening of the wires, which would cause noise. All this has been carefully studied in advance.

(Colonel Rommel, *Infanterie Greift an*, P. 114, War of 1914-1918.)

4. Importance of Training in Hand-to-Hand Combat.

Night combat is combat of infantry against other infantry. In hand-to-hand fighting, where courage and strength are equal, it is the unit best trained in this form of combat which wins. That is why it is absolutely indispensable for the men to receive thorough training in this type of warfare.

V. Practical Training.

This may be acquired at the time of the "Preliminary Exercises" by combining, for instance, training in noiseless progress with exercises in the location of sounds. With a little imagination it is possible to find ways of giving an infinite amount of variety to the exercises. By always choosing a more difficult terrain, they may be made more and more interesting.

Examples:

a. Cross a zone which is limited in its extent on both the right and left and guarded by one or two sentries.

(1). Singly.

(2). In small groups.

b. Approach a sentry and put him out of action without attracting the attention of the enemy.

c. Knowing the location of the enemy, carry out a mission of reconnaissance where the enemy is located, and bring back a report.

d. Knowing the zone where the enemy is located but not the exact place, discover his exact location.

e. A surprise attack (an operation of the type with which the troops should be well acquainted in all its aspects):

(1). against a sentry post;

(2). against an enemy position organized with front in all directions;

(3). against an element of the enemy's defense;

(4). against a command post inside the enemy's lines;

(5). for carrying out demolition;

(6). against a body of troops moving over a road at night; etc.

An example of number six of paragraph (e) follows:

"The company assumes a formation with fronts in all directions. The enemy perceives that we are in a bad situation. Every man remains at his post, animated by an iron will. A Polish combat train goes by us at a gallop. We deliberately open fire. One of our men of his own accord ventures a little ahead. Suddenly two Poles with bicycles appear. He leaps at the throat of one of them; the other flees.

"We start off. We have the task of making our way to Grodek over the highway.

"About 1:45 AM, we get as far as the village of Bratkowice. A few minutes halt is ordered. Suddenly, we are fired on from every side. We are in a very serious situation. All you can hear is the singing of bullets, the reports of Polish machine-gun pistols, and the explosion of grenades. We instantly drop to the ground. Our mules are crazy with fear and trample on the men who are on the ground. Our mules abandon us this time.

"In the darkness it is impossible to distinguish between friend and enemy. That is why we employ the hand grenade and the pistol only in short range combat. In a short time we manage to break our way out and retreat, still fighting.

"We arrive at the west edge of Grodek about 4:00 AM on the morning of 16 September, sorely tested by the trying events of the night.

(*Wir Zogen Gegen Polen*, P. 117, 1939.)

Remarks: It is easy to bring about confusion in the darkness. This lends value to feints and ruses of various sorts. It is well that the troop be aware of this and learn to execute feints (pretend attack at a point different from that of the real attack), also to employ them in defense.

VI. Training of Officers for Night Work.

In leading troops at night, one encounters many problems created by the necessity of silence and the difficulties of maintaining contact, even with artificial help. These problems are rendered still more difficult by the psychological effect of the feeling of isolation caused by the darkness. The officer is more than ordinarily responsible.

That is why it is necessary to give special training to the officers who have charge of such work. The instruction and training will deal with orientation and giving of orders, taking into consideration the particular conditions created by the darkness. In this training an effort will be made, by teaching the officers to adjust themselves quickly to new and unforeseen changes in situation, to increase their faculty of adaptation and rapidity of reactions, qualities required to a high degree in night combat.

VII. Study of the Combat Sector in Which They Will Be Called to Fight.

As M. de la Palisse would say: "There is no better way of learning the value of a system of defense, than by attacking it."

But it is sometimes difficult for the officer who has established the defenses to get rid of the view which has served as the basis of his plan of fire. He runs the risk of attacking from the point of view of a defender. It is better, therefore, that the exploration of such a sector after night-fall be left to some one else. For example, it might take the following form: The detachment charged with the defense would be divided into a certain number of patrols; a certain plan of attack would be chosen and carried out. The men should take turns as attackers and defenders in order that they may learn to operate in both ways. Afterwards, for the purpose of checking the accuracy of the lessons learned from these exercises, the sector should be attacked by some different unit, one belonging to the adjacent sector, for example.

It is also evident that a study should be made of the possibilities of counter-attacks for relieving some point where strong pressure is being exerted or for retaking some element of defense which has been captured by the enemy, an operation which may be less costly at night than by day, if well conducted.

Besides its tactical value, such preparation also has considerable merit from the standpoint of its effects on the morale of the troops, for it increases their confidence in themselves and in the terrain with which they have become acquainted.

When Will the Decision Be Attained?

[An article by General Ludwig in *Militär-Wochenblatt*, 3 October 1941. Translated from German at the Command and General Staff School, Fort Leavenworth, Kansas.]

While the following article was intended primarily for home consumption in Germany and is an attempt to allay the anxiety of the German public over the unexpected Russian resistance, it is also important to the American military reader in that it reveals the hopes which our enemy has placed in the breakdown of Russian war industry and the elimination of the Eastern Front which, in turn, was to have brought the collapse of Great Britain.—THE EDITOR.

The unparalleled victories of Germany in this war up to the present time may have produced an attitude of impatience on the part of many persons who had hoped for a quick decision. But these persons do not stop to consider that so immense a problem as the working out of a new order in Europe cannot be solved in a hurry when confronted with the opposition of the western powers and Soviet Russia if a final decision and the joint future of Germany and her allies is to be established on a sound basis.

The existence of such a goal automatically places all impatience, a product of selfishness, in the same category with attitudes of irresponsibility as concerns the public good. In spite of this, after two years of war, the question of when the decision will be obtained stirs the whole world. History teaches us that it is usually possible to know the exact time when the decision was won only by subsequent study. If this were not the case, and if, while the fighting was still going on we could be absolutely certain that we recognized this time, we should not see so many unfortunate attempts to continue a hopeless war because the hope still existed of winning in some way or other. As a rule, the longer a war lasts the harder the victor will make his terms in order to make up for his losses. We do not mean to say, however, that all hopeless wars should be given up as a matter of principle. Sometimes it makes for a better future to resist to the end. But when the opportunity for ending such a hopeless war under terms which are both agreeable and honorable is offered, this opportunity should be accepted as this is an aid to a more permanent agreement with the victor after the war. Bismarck's peace treaty with Austria is illustrative of this case. Also, the statesman of the nation which surrenders has failed greatly in his duty to his people when he permits the war to continue beyond that period when an accurate recognition of the situation and an opportune surrender would have made endurable peace terms possible. History will probably point out as the most serious mistake of the English statesmen the fact that they refused in blind pride to accept the generous offers of peace of the Führer in the autumn of 1940, just at the time when the war was becoming hopeless for them and in so doing barred all chances of a future agreement. Proving utter lack of military judgment, they continued in the illusion that they would still be able to win the war by the help of foreign nations without great effort on their own part and allowed the proper moment to slip by for bringing a hopeless task to a close. In time of war, it is always hard to recognize objectively the exact time when the tide turns in favor of the enemy. It is not always possible even for history to determine this time in such a way that its judgment will not be disputed. There have also been wars, as the Thirty-Years' War and the World War, which ended without any military decision. Even Frederick the Great fought a war which had no military decision, but he attained his military objective in the retention of Prussia. After the battle of Leuthen, his enemies began to see that they were not able to do away with this clever commander and avoided open battle with him. That Russia dropped out of the group of nations allied against him was less the result of fortunate chance than the power of the great king's personality. In the second case, the German "Wars of Consolidation" were marked by definite decisions at Königgrätz and Sedan early in their course even though long and violent battles entailed useless sacrifices on the part of the French. In the Napoleonic wars we can regard the retreat from Moscow as the beginning of the decision in spite of the fact that it was not clearly recognizable until Leipzig. Napoleon had failed in his Russian campaign to realize the importance of adapting his methods of warfare to the existing conditions and to content himself with the attainable.

The Enemy's Plans Have Failed

And neither have our enemies been able to recognize at the proper moment that they have reached the limit of their powers and the fact that their military plans have gone on the rocks nor have they been able to recognize where all this is heading. They planned to gain the decision by means of their blockade; but as soon as Germany was in possession of the coasts of Norway, Belgium, and France, the tables were turned and the blockade of Germany became hopeless. Subsequent history will probably show that it was just at this instant when the decision was won against England. England had failed to coordinate her military operations and war plans and to hold the Belgian-French coasts at all costs. Only the possession of the Belgian and French coasts by the British would have annulled the efforts to blockade England. But England, acting in accordance with her experiences in the World War relative to decisions on the European continent, withdrew her forces. She believed it to have been a mistake that she had engaged the main part of her forces in France. These forces were threatened with annihilation at the time of the German breakthrough in the direction of Amiens in March 1918. The rescue of these forces would not have been possible even in part, as at Dunkirk. If this misfortune had befallen the English, the war would have been lost for them in spite of their navy. It was apparent that they were unwilling to run this risk a second time, and for this reason they did not engage large forces in the support of France. But in war the principle applies that the one who does not risk his life loses it. England's weak support of France led to the latter's debacle and prepared the way for England's subsequent fall.

It is possible, of course, that the English strategists had hoped that the French would organize permanent defenses in some rearward position, but they would have required considerable English reenforcements for this. Since the British were not able to bring themselves to this decision out of fear for the safety of their island, they will lose the war. In view of this conduct toward an ally, all the other nations whose favor England had hoped to win could not help losing all desire to sacrifice themselves for England, excepting the Serbs—who had been won over with money—and the weak Greek government that did not know which to fear more and joined up with the wrong party. So the surrender of France was the beginning of the end for England.

European vs. English Industry

Our victories in the Balkans have brought about an industrial unification in Europe which stands opposed to the industrial organization of Great Britain. The growing victory on the eastern front will destroy the war industries of the Russians. It is no longer possible as in the time of Napoleon to wage a retreating fight, for in so doing the Russians would suffer too heavily in the loss of essential equipment. It is easy to understand how our victories on this front have given rise to the question of whether the decisive point is now generally recognizable. As long as Russia, a possible yet obviously hostile ally, stood ready to seize every opportunity for action in its plans for world revolution, England still had the hope of winning the war by sacrificing Europe to Bolshevism. Of course, this policy was extremely shortsighted, for victorious Bolshevism would never have stopped with plutocratic England who had been so great an enemy in the past. History will probably designate it as one of the greatest services which the Führer has rendered to Germany that, with the shrewdness of Frederick the Great, he broke up a developing coalition in time to avert the danger. With our final victory over the Russians, the English military plans will have gone on the rocks, and the turning point of the war should be found here. United Europe is already self-sufficient in the main and able to feed itself. But in England, on the other hand, the worry over food and raw materials grows from day to day for the reason that it is not possible even to replace approximately the lost tonnage with new ships. The longer the war lasts the more keenly will it be recognized in England that time is against her for the reasons which we have stated. But the idea of adopting another type of strategy, an offensive war against Europe for instance, should be plainly impossible to begin with, regardless of how much license is granted an unskilled propaganda agency to play up the idea. We may, therefore, regard it as fact that our victory over Soviet Russia is associated with our victory on all fronts. After England's refusal to accept the Führer's peace proposals, this war must be fought through to a finish.

Comments on the Present War: The War In Russia.

[From *Revue Militaire Suisse*, January 1942. Translated and condensed at the Command and General Staff School, Fort Leavenworth, Kansas.]

The war has been in progress in Russia for seven months now. If we listen to the friends of the Axis Powers, the decision has practically been obtained and the Soviet army no longer constitutes a danger for the German forces. But, on the other hand, if we give heed to those who sympathize with the Anglo-Saxon cause, the German troops are at this moment passing through a period of reverses very much like the disaster which befell the troops under Napoleon. If we permit our sympathies or feelings to influence us, it is very easy to arrive at such opinions with regard to the present events.

There is no doubt that this campaign constitutes the most gigantic military struggle in the history of the world. For the first time, we see armies of almost equal strength facing one another, both of them animated with the same fanaticism in the defense of their respective causes.

So far, we are able to distinguish three phases in the operations, and we shall examine them briefly for the purpose of gaining some idea, if possible, of what the future holds in store.

The first phase was that of surprise and absolute initiative in the conduct of operations by the German high command. The objective of the German high command was the destruction of the organized Soviet forces. This purpose was evident in the German communiques. Also it was the logical thing to do, for once these hostile forces were destroyed, it would be easy to occupy the vast territory. This was the intention back of the great battles of annihilation at Bialystok, Minsk, and Galicia (Lwow). The operations continued afterward against the Stalin line and were expressed in the great battles of Lake Ilmen (in the Baltic countries), Smolensk, and Kiev.

It was certainly in the Smolensk-Vyazma sector that the most violent engagements occured and that the material employed reached a previously unheard-of magnitude.

In spite of the impressive figures representing the numbers of prisoners and the capture of a considerable amount of materiel, the facts could not be overlooked that although the Soviet army was weakened, it was still fighting; and the Russians kept throwing new troops into the battle. Without knowing exactly what went on in the interior of Russia, it was necessary to recognize that the Soviet government was still in operation.

Unable to destroy the Russian forces in a direct manner, the German high command changed its objectives, and the great offensive begun at the beginning of October marks the second phase of the campaign.

Leningrad, Moscow, and the Ukraine (Donets basin) were the objectives of the German armies.

Not having been able to liquidate the Soviet forces in the anticipated time, the German troops imagined that by gaining possession of these great industrial centers they would deprive the Russians of the production necessary for the maintenance of their armies. Besides, in view of their importance, those in control of the Soviet forces would attempt to defend them and would play into the Germans hands by directing all their forces against them.

Thus, during the first phase in attacking the Russian forces, the Germans gained territory; and in the second phase, they destroyed Russian forces in gaining political and industrial objectives. We do not find in these operations the gaining of geographical objectives, as certain authors claim.

The battle reached its culmination in front of Moscow, and time and again, the German communiques emphasized the disintegration of the Russian forces. The declarations of high German personages, among them Dr. Dietrich, Chief of the German press, affirmed that the decision had been reached and that henceforth the Russian armies would no longer constitute a danger to the Reich.

The German Offensive Stops

While the offensive against Moscow was at its height and while Leningrad, entirely surrounded, was expected to capitulate any day, word was received of the suspension of the German offensive.

The German high command gave as a reason that the terrible Russian winter had arrived sooner than anticipated: i.e., incalculable factors had entered the game.

It was thus that a third phase became evident.

However, in war when one of the belligerents declares that he wants to cease operations, the other must be in accord with him or at least in such a condition that it is absolutely impossible for him to take up the initiative in the operations.

For the sake of maintaining a purely objective attitude in the matter, we must recognize the fact that the Russians did not make use of this unique chance of reorganization because the Germans had momentarily changed to the defensive, but instead they assumed a clearly aggressive attitude. It was impossible to avoid one principal deduction: viz., that the Soviet army was not completely disintegrated for the reason that they were able to assume the offensive immediately, after a retreat of almost six hundred miles!

The third phase of the campaign, heralded by the suspension of the German offensive, enables us to come to a few decisions.

First, the Germans declared they wished a front more favorable for defense than the one held at the end of their offensive operations. This was logical, for the points gained in operations of this sort are not necessarily suited for the organization of defense positions. There were, therefore, necessary "straightenings of the front." These brought easy successes to the Russians. In fact, they occupied terrain which the Germans abandoned more or less voluntarily. It was not known, however, where these "straightenings of the front" would stop.

As a result of the abundance of reports on the part of the Russians and the sobriety of the German communiques, the most extraordinary rumors began to circulate; and finally the Germans announced, approximately, where the front was that they intended to hold during the winter. Although it was but indefinitely announced, it may be described as passing through Schlüsselburg, lakes Ilmen and Seliger, then to the east of Mozhaisk, Kaluga, Orel, Kursk, Karkov and Taganrog.

It is no longer a continuous front but a series of supporting points forming deeply fortified zones. From certain indications, it would seem that the organization of this zone is not yet terminated, hence the vigorous resistance on the part of the Germans to the Russian drive. It is necessary to gain time also.

German Retreat Is Costly

At the conclusion of the German offensive, it was known that the Russians were making great efforts to prevent a stabilization of the front. Now they hope in this way to use up the forces of the enemy. On the other hand, they hope that if they are ever able to launch a really great offensive the troops will not be faced immediately with a fortified zone. This worry on the part of the Russians is evident all along the front. Whether retreats be voluntary or not, they always cost men and materiel. It is always necessary to sacrifice rear guards and abandon materiel. Then in addition to this, there are the terrible rigors of the Russian winter. But it would be taking an unjustifiable step to go still farther and call this retreat a disaster. The Russians have gained important tactical successes recently, but nowhere have they recaptured great strategic centers—at least at the moment that we pen these lines.

It will only be when Rzhev, Vyazma, Smolensk, Orel, Bryansk, Kursk, Kharkov, and Taganrog are again in Russian hands that we will be justified in speaking of operations capable of influencing the outcome of this campaign.

Taking advantage of the opportunities of the moment, the Russians are making serious efforts to retake these places. Great enveloping movements have been started around Rzhev, Vyazma, Orel, and Kharkov. On the other hand, in certain places as, for instance, between Vyazma and Mozhaisk, around Kharkov and Taganrog, the Germans are attempting to assume the initiative. Up to the present, the Germans have not appeared to attach very great importance to the Russian advance. They declare that the actions are taking place in devasted areas of no strategic or economic importance. For them the main task is to get new forces together for a spring offensive. Whether this begins eighty or one hundred twenty miles to the east or to the west is of no consequence, as the same mission will exist as in the first phase of the war, namely, the destruction of the Russian forces.

On the other hand, the Russians are making every effort to cause the Germans to employ important forces in the various engagements in order that these may be exhausted before they are able to begin a spring offensive.

Summarizing, we may draw the following conclusions: The Russians have gained successes of greater moral and political than of military importance except around Moscow, where they have succeeded in freeing their capital, and in the south. The Germans were justified in abandoning their "Blitzkrieg" tactics, but as long as they have not abandoned the great centers we have indicated, we cannot speak of a defeat.

It seems probable that the spring offensives will bring a decision in this theater of operations (we do not say in the war); but we will be forced to wait before expressing an opinion.

Epic of an Encircled Russian Unit

[Condensed from *The Tank*, January 1942, at the Command and General Staff School, Fort Leavenworth, Kansas.]

The past issues of the MILITARY REVIEW have carried articles from Soviet sources showing that combat under conditions of encirclement had received the careful study of the Red Army's command even before the present Russo-German conflict. Events have shown that this training has served the Russians well. On more than one occasion encircled Russian units have continued to resist, inflicting heavy casualties upon the Germans and frequently slowing up the latters' advance.

The following article relates the actual experience of a large Soviet unit, which had operated four weeks in hostile territory before rejoining friendly forces.
—THE EDITOR.

One of the unusual features of the present campaign in Russia is the frequency with which bodies of Red Army troops, cut off from their main forces by a sudden breakthrough of German armored attacks round their flanks and into their rear, have continued none the less to fight on either as units or as guerrilla bands, have inflicted heavy damage on the enemy, and have in some cases succeeded in making their way back to their own lines in safety. The following is a brief summary of one such incident told by War Correspondent M. Polyakov.

The force concerned, under Major General Galitsky, appears from internal evidence to have been a mixed frontier defense brigade or possibly a division; but details of this sort and all place-names have been omitted. Within four days of the outbreak of hostilities the force was heavily attacked by the 19th German Panzer Division and was holding a twenty-mile front. In three days' fighting it destroyed 265 enemy tanks, but though all frontal assaults were repulsed, the enemy managed to work round the force's flanks on all sides, and cut it off. On the following day German aircraft dropped leaflets on the force, telling it that it was surrounded and including a sketch map which, as General Galitsky remarked, was useful in showing him the exact situation. That night he issued these orders to all Unit Commanders:

"We now find ourselves in the enemy's rear. All men should be informed of this straightforwardly and openly. No panic. Set an example by your own conduct. We shall retreat towards the front line to rejoin our other units. To-day we must place ourselves in the position of a unit acting in the enemy's rear. Henceforth we adopt guerrilla methods. We shall fight the Nazis at every step, worrying them, harassing them, giving them no peace." Then he issued five standing orders: "No one to use the words 'They say,' only 'I saw myself'; no idle chatter or panic mongering; equal rations for all with ammunition, and no indiscriminate firing; no smoking in the open at night on pain of death."

Guerrilla Tactics Begin

On 30 June the detachment performed its first exploit—the capture of a station full of enemy shells, tanks, and motor fuel. German tank tarpaulins spread about in the area deceived prying enemy aircraft into the belief that all was well while the systematic destruction of all war material that could not be used by the force was being arranged. The process was not interfered with in any way. Next the detachment had to cross a river over which the bridges had been blown up. This was accomplished at night, despite heavy but ill-aimed bombing from German aircraft. At this time M. Polyakov himself was slightly wounded in the foot. The force got over the stream and found shelter in a thick forest to the east of it.

Next day, 1 July, nine German troop-carrying aircraft came to drop parachutists in a small glade near where the force was hidden. Their coming was heralded by reconnoitering aircraft, and by the time they arrived all was ready for their reception. The first parachutists were shot while still in the air;

others fled as soon as they touched ground. A large haul of small arms and ammunition was left to the Russians as tangible fruit of this success, which put great heart into those who had taken part in it.

On 2 July a further series of bombing attacks on the force's new positions were delivered by German aircraft, two of which were brought down by the detachment anti-aircraft battery. Later it was found that an old peasant, clad in a dazzlingly white tunic, who despite the heavy firing, had continued placidly ploughing potatoes nearby, had been signalling to the hostile bombers by patterning the course of his furrows to convey messages. He was arrested and shot as a spy, and the detachment moved off under cover of night to a new lying-up area. By this time food was becoming scarce. As the men were settling into their bivouacs, two half-clad and badly burned peasants came in to tell how the Germans had occupied their village, and while looting all food and property, found twelve Russian soldiers in hiding. As a punishment all the inhabitants were locked in their huts, which were then set on fire. Those who tried to escape by the windows were shot. Over a hundred men, women and children were thus massacred.

On the following night the detachment avenged the slaughter. The Germans, unsuspicious of any danger thus far in rear of their own front line, were sleeping off the effects of a carousal when they were suddenly attacked. A hundred and fifty of them were killed and the rest scattered in wild flight.

By noon the force was once more in contact with fresh German forces, and one of its battalions, detached the night before in pursuit of the flying hostile detachment, had disappeared and not regained touch. Much anxiety was felt for it, but eventually a wireless report was picked up, giving its whereabouts and stating that it was encircled by German motorized infantry and heavily engaged. Just before nightfall the force's guns opened a sudden and sustained fire on the positions of the enemy who were surrounding the battalion. The Germans, unaware of the proximity of its main body, had expected to be able to capture the Russian battalion at leisure. Under cover of this fire the lost unit vigorously attacked, burst through the ring surrounding it, and rejoined its comrades, leaving behind it on the scene of the engagement the dead bodies of some four hundred of the enemy.

Still pressing eastwards, on 4 July the force ran into a new ring of Germans. Those pursuing it had been left behind, but that evening they came up against other enemy troops on the southern flank, others were reported to the north, while ahead a hostile artillery barrage blocked the way to the east. The situation was uncomfortable, but by skillfully moving about a mobile battery so as to simulate several in action from different positions, General Galitsky managed to draw the fire of all the hostile batteries and get a clear idea of their dispositions. Next day German aircraft once more dropped leaflets on the bivuacs of the force, calling on it to surrender; but before dawn on the following morning it had burst its way through the hostile ring to the south. It moved to attack in three columns, completely surprising the enemy at each point, his sentries being apparently lethargic and somnolent. A cordon of his infantry posts stretched along a road, with patrolling tanks moving up and down it between them, had next to be passed; behind that was a railway line more lightly held, and only when this was passed could the comparative safety of the force be assured. But the Germans, confused in the darkness, gave way at the points of attack and let the Russians through across the road, while on the railway no resistance at all was encountered. At the end of this successful exploit, however, the force found itself split up into several small detachments, out of touch with each other, but with orders to make each its own shortest way to safety as best it could.

Russian Tactics Alarm Nazis

For the next ten days the detachment directly under General Galitsky with which our narrator found himself, continued its depredations in the heart of the hostile lines by shooting up supply columns of lorries, raiding villages where small enemy units were billeted, carrying off sentries and traffic control posts, setting time fuses to destroy dumps of petrol and ammunition, and harassing the Germans and causing alarm and damage wherever it went. The other two detachments into which the force had been split were doing the same elsewhere. On 16 July the main detachment heard that a punitive expedition, searching for it, was quartered in barracks on the outskirts of a nearby town, where the usual retributive measures had been taken against the inhabitants. That night a successful attack was made; the punitive expedition was surprised and dispersed, and all the vehicles, munitions, petrol, and stores it had left behind it in its flight were set fire to and destroyed. Four lays later the detachment found itself within reach of an important railway which the Germans were using intensively as a line of communication to their front. Some men of the detachment hid themselves on the sides of a cutting overlooking the line, and the arrival of the first heavily laden train was greeted by a bunch of ten knotted grenades which hit the boiler of the engine and blew it up. The coaches following were wrecked, and the line was hopelessly blocked. Meanwhile others had captured a nearby station where they put out of action the points, the signal apparatus, and the telegraph and telephone equipment. After this good day's work the detachment pushed on. It was now within twelve miles of the front but had to turn off some way to the south to find an easy place for its final breakthrough. Some of the girls with the hospital detachment, which had accompanied the force and shared its perils and hardships, were now disguised in peasant clothes and sent ahead to get through to the troops holding the Russian front, and to arrange for their co-operation in the attempt. This they successfully accomplished. On the night of 23 July the detachment, passing safely in the dark by several lines of trenches containing sleeping Germans and bayonetting several sentries and patrols encountered on the way, reached a place of concealment in some woods in the middle of the wide no man's land between the armies. Beyond lay a village into which both sides sent occasional patrols, and here one of the detachment scouts got into touch with his own front line by telephone and recognized the voice of an old comrade of peace-time days. Next morning an armored car section, escorting some empty troop-carrying lorries, arrived to pick up the escaped detachment and bring it back to the Russian lines. The greater part of the original force had arrived before them. The force had thus rejoined its main body after having spent four weeks in the heart of enemy occupied territory; it had traversed 300 miles in making its way back again, and had inflicted great damage on the enemy during its Odyssey.

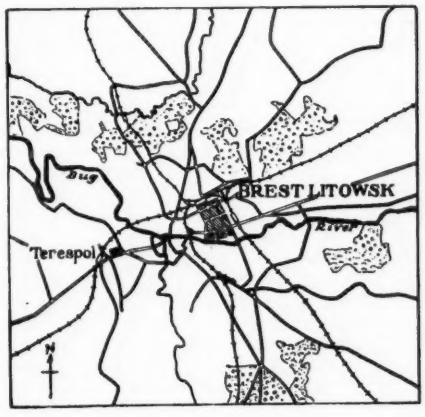
With the Shock Companies Into the Citadel of Brest

["Mit Sturmkompanien in die Zitadelle von Brest" by Gunther Heysing, in *Völkischer Beobachter*, 30 June 1941. Translated from the German in the Troops Division, Corps of Engineers, Washington, D. C.]

Soviet Russia, after taking the old fortress of Brest on the Bug following Germany's Polish war, had rebuilt it into a modern fortification. The citadel and the forts had been extensively reinforced in the last few months by modern bunker groups, and with these improvements the fortress represented a considerable obstacle. The Soviet fortifications lay behind the Bug, which at this point is as wide as 100 yards and with its steep banks represents an obstacle extremely difficult to attack. Immediately behind this strong rampart, the Russians had also moved up powerful forces to meet the attack.

Since we wanted to prevent a long battle and bloody losses on the German side, it was necessary to try to take the fortress by surprise so as not to give the Russians an opportunity to use to full advantage the many artillery units that they had massed in and around Brest in preparation for the expected attack. To this end, in the last few days the heaviest German artillery had been brought into position in well-blockaded places. On the evening of June 21, the day before the attack, the blinds and tree screens behind which the powerful war machine had up to that time been camouflaged were removed. The field of fire was now open. Simultaneously, infantry and pioneer shock troops moved up to their jumping-off points in order to be able to start immediately after the preparatory fire of the German artillery.

In the dark streets behind the low frame houses of Terespol, the town lying on the other side of the Bug from Brest-Litovsk, the trains and groups, loaded with munitions, waited the order to attack. The staffs were working feverishly in the quarters of the old forts of the Brest-Litovsk fortress which stood out both in a westerly direction on the Bug and on the Russian side. It was an unusual situation: at a fortress two groups of forces of great strength faced each other. The only difference in the sides was that the Soviets had the better position, with their strong citadel and the Bug in front of it as a deep obstacle. A superficial review of the German side on the evening of June 21 would never have stimulated the belief that at dawn of the next day the German army would attack. The houses were not darkened, and the civilian population moved about in the streets. On the tracks, locomotives puffed back and forth.



Immediately after the first burst of fire, two shock troop companies moved forward from two important positions directly toward Brest. The one at the left thrust forward across the railroad embankment. The second shock troop undertaking was executed by a motorcycle company. Their mission was to approach the Bug under cover of the German artillery fire, then cross the stream in inflated boats, and in hand-to-hand combat force their

way into the citadel. This undertaking was accomplished with but small casualties.

While the heavy artillery fire was still continuing and only a few minutes after the first shot, the enemy found himself face to face with German soldiers who assaulted him with every means of short-range combat between the burning barracks and casemates. A violent battle developed inside the citadel itself, the center of which fell after two days.

While the battle was still going on in the citadel, both to the right and to the left of the fortress the attacking regiments had been successful in every case in crossing the Bug, establishing bridgeheads on the east bank, bringing up reinforcements, building bridges, and making a lateral thrust at the city. From statements of prisoners it was gathered that the Soviets, who had concentrated about two divisions in the citadel alone, had not counted on such quick striking power on the part of German arms and soldiers. Although the mobilization of German combat forces on the west bank of the Bug had not escaped them and although they themselves had for weeks been in readiness to attack, the Soviets were nevertheless immediately crippled by the unprecedented blow of the German arms. Only in the course of the morning did they collect in small units for defense and begin to oppose the push of the German regiments.

The air above the fortress was completely mastered by the German air force from the first minute. Soviet machines that rose up were driven away by the antiaircraft guns or shot down in flames by our pursuit planes. When the aerial battles were on, everyone stared into the sky as if electrified whenever the land battle allowed. It could almost be said that the oncoming Russian fliers fell from the sky in groups.

In three minutes a single pursuit plane shot down four Russians, some of them taking to their parachutes. The machines were burned.

Brest-Litovsk itself, the city for which hard battles were fought in the World War, where the peace negotiations with Russia were held in 1917-1918, the city which was attacked on September 14, 1939 during the Polish War by the troops of the army of Von Kuchler and conquered after stubborn resistance on September 16, is now almost completely destroyed. The Russians can no longer count on their obstacle fort on the Bug and the strong forces of the Red army that were located there. The fortress was taken by the German army in hand to hand combat.

U.S.S.R. Air Force

[Condensed at the Command and General Staff School from a reprint appearing in *"The Engineer,"* London, England, as published by United States Naval Institute Proceedings, February, 1942.]

The Soviet Air Force, of which so little is known, has apparently been an important factor in the Russian stand. This British source maintains that the Red Army's resistance would have been impossible were is not for the performance of its Air Force.—THE EDITOR.

Information concerning the size and quality of the Russian Air Force is scanty, and such as is available is derived to a considerable extent from German and Italian sources. If we are to believe these sources, Russia's air fleets are neither overwhelmingly numerous nor equipped with aircraft of fully modern types. It is true that neither in Spain nor in Finland did the Soviet machines give a very impressive account of themselves. Nevertheless, later events speak clearly for themselves. For months Russia has had to bear the onslaught of Germany's might on land and in the air. Save for a certain—believed to be considerable—number of fighters retained in the West and elsewhere to meet the attacks of the R.A.F., the Germans have hurled against the Russians all the aircraft at their disposal. While the Germans have succeeded in overrunning large stretches of territory, they have failed to achieve the destruction of the Russian armies, and on repeated occasions those armies have managed to escape from or break out of very threatening positions. It may be taken for granted that no armies could have fought so long and so intensely against an enemy possessing the aerial equipment which Germany has at her command unless they themselves had an air force comparable in quantity and quality with that of their attackers. Had the Soviet strength in the air been as markedly inferior to that of the Germans as some would have us believe, it is inconceivable that the Battle of Russia could have lasted as long as it has or been waged with so much sustained fierceness. Even Hitler has admitted that Russia's strength as a fighting power has proved greater than he anticipated. The conditions of modern warfare are such that we must interpret that remark as being all-embracing. A courageous infantry, a fully equipped artillery, and an efficient tank corps could not have sustained the German onslaught in a manner justifying Hitler's admission unless it had been backed up by an air force equally courageous, equally well equipped, and equally efficient.

Development of Industry

Comment has frequently been made and considerable surprise has been expressed concerning the apparent success with which the Soviet Government has succeeded in converting the backward, largely agricultural Russia of Tsarist days into a country of large industrial undertakings rivalling in its output of raw materials and finished products those countries which began their industrial development a good century earlier. Such comment and surprise are perhaps founded to some degree on an inadequate appreciation of the extent of Russian industry before the Revolution. The collapse of Russia in 1917 was brought about far more by mismanagement and corruption in high quarters than by inadequacy of technical resources. The Russian peasant of those days may have been largely destitute of mechanical instinct, but it cannot be denied that during the last century Russia produced a number of famous chemists, physicists, engineers, naval architects, and metallurgists. These men and their work provided the nucleus about which the Soviet Government built, and the very fact that the country was not highly industrialized when that Government came into power undoubtedly helped it in its schemes for establishing vast modern mass production factories throughout the country. The ground was unencumbered and ready for exploitation in the light of the practice and experience of nations with an older industrial history. British, American, and German engineers helped materially to establish the new order in Russia's industrial life, and with commendable wisdom the leaders of the Russian people sought to follow the practice of their preceptors rather than to establish at the outset an independent technique and a characteristically Russian school of design. In that respect they but followed the example set by Japan in the middle of the Victorian era when it adopted the policy of "westernizing" its industries. In Russia, so far as aeronautical manufacture was concerned, this policy was initially particularly well marked. Of the earlier Soviet fighters, the I-15, used in Spain and Finland, bore a close resemblance to the French Breguet design, while the I-16 showed clear signs of American influence and was driven by a Wright "Cyclone" engine built in Russia under license. A later type of fighter, the I-17, is patterned on the supermarine "Spitfire" and is driven by a native version of the French Hispano 12-cylinder engine. In the design of bombers, the Russians at first showed an inclination to develop along lines of a more independent nature. They paid close attention to the multi-engined, heavily armed giant bomber thereby, it may be noticed, anticipating developments which have recently occurred in this country (England—Ed.) and America. Since 1937, however, they have moved in the direction of high-speed medium bombers with twin engines. One of their best-known aircraft of that type is the ZKB-26, a bomber bearing a considerable resemblance to the American Martin 139 aircraft and driven either by two Hispano or two "Cyclone" engines of native production, or in a later verison by Gnome-Rhone 1,000-hp. engines built under license. Of the most recent Russian productions, the MIG-3 fighter and the "Stormovik" dive bomber, insufficient information is at present available to enable us to say with certainty what their origin has been. It seems probable that they have been derived to a considerable extent from the British "Hurricane" and the German Junkers dive bomber, respectively.

Progress Since 1918

In recording these facts we have not the least intention of minimizing the credit which Russia deserves for the tremendous effort put forth since 1918 to establish an extensive aeronautical industry within her boundaries. To develop the means of production was a sufficiently great task without complicating it by seeking to evolve independent designs. Research has not been wholly neglected. As early as 1918 a central research institute for aerodynamics and hydrodynamics was established, and in 1930 a corresponding institute for research on aero-engines was brought into being. In 1932 an organization was created charged with the duty of testing and accepting the equipment produced by the factories. It is, however, in the concentration on the means of production and the adoption with or without modifications of established foreign designs of aircraft and aero-engines that we may find the true explanation of Russia's present power in the air. To what extent the efforts of the Soviet rulers have been successful in achieving this object may be judged from the fact that, according to information emanating from Russia, the number of people engaged in the aeronautical industry during 1940 was 500,000 and that the output of aircraft of all types during that year was 12,000. When the war with Germany began, Russia is believed to have possessed between 6,000 and 10,000 military aircraft divided in the proportion of 40 per cent fighters, 45 per cent bombers, and 15 per cent reconnaissance and naval air arm craft. Two-thirds of the country's total strength was believed to be concentrated in the West and one-third in Asia and the Far East.

The "Osoaviakhim" and Air Forces of the Soviet Union

[By Dr. Paul Ruprecht in *Militär-Wochenblatt*, 24 October 1941. Translated from the German and condensed at the Command and General Staff School, Fort Leavenworth, Kansas.]

In totalitarian countries the civilian defense effort is closely coordinated to the general war plans. The Soviet "Aviakhim" Society is an excellent example of such coordination.—THE EDITOR.

For a long time the Russians have been developing their air arm. In 1936, at a session of the Eighth Party Congress, General Khripin, the then Chief of Staff of the Russian air forces, called attention to its state with the assertion that the Red air force was the greatest in the world in fighting power, equipment, training and morale of its crews, as well as in their willingness to sacrifice all in the coming struggle. He closed his speech with the statement, that if Germany were training more than 70,000 aviators, the Soviet Union must have more than 100,000. This figure, Khripin added, is not at all fantastic. It is based on actual Russian capability.

Whether or not the Russians succeeded in reaching this goal can be learned only from the comments of foreign observers. As early as in 1927 by combining several organizations interested in national defense preparations into what was called the Osoaviakhim or, more briefly, Aviakhim (Society for the Fostering of Aviation and Chemical warfare), the greatest organization of its kind in the world was called into being. Already in 1936 it had a membership of fifteen million. There is no organization in Russia to compete with the "Aviakhim," for as far as numbers are concerned, it is far in advance not only of the Party but also of such well known bodies as the Communist Youth Society, the Union of the Militant Atheists and the Society for the Combat of Illiteracy. The structure of the organization of the "Aviakhim" runs parallel with that of the party system, beginning with the single unit and ending with the General Congress of the whole Soviet Union.

The enormous sum of money required by the "Aviakhim" for military training of the civil population of the giant empire comes, in addition to contributions by members of the organization, from regularly held lotteries and funds paid in by the professional organizations. However, a considerable part of the receipts come from the so-called "defense acres," little tracts of land which are cultivated and cared for gratuitously outside of normal working hours by the members of the units themselves for the benefit of the local "Aviakhim" groups. In the course of time, this "defense acre" has come to be one of the most important sources of money for the "Aviakhim" and has contributed greatly to its spread over the giant empire.

"Aviakhim" not only concerns itself with the training of the civilian population for war, but also operates great factories for the manufacture of the material needed, and this includes not only the material required for visual instruction, but also firearms of all kinds, signal apparatus for practice purposes, and gas masks.

Even though the military training undertaken by the "Aviakhim" covers the field of all the various weapons, yet the organization regards the training of youth in aviation as its main task. These latter are divided into work groups, in which their interest in aviation is aroused. After this they are given training in glider flights as a preparation for flights in power craft. The members of the "Aviakhim" are required to attain considerable proficiency in both these branches. Whether, however, it has been possible to reach the goal set by Stalin at the same Eighth Party Congress is not known. At that time he desired the tripling of the strength of the air force. Since, at the end of 1936, the strength of the Russian air forces was estimated to be 5,000 planes, its strength at the end of 1939 must have consisted of 15,000 planes, if the orders of Stalin were carried out.

If it has been possible to bring the Russian air force up to Stalin's requirements, we may assume that the necessary crews have been trained with the help of the "Aviakhim." In any case, therefore, this organization must be regarded as an important source of strength for the Russian air forces.

Some Notes on German Tactics and Training

[From "De un Viaje al Frente Occidental: Notas" by Lieutenant Colonel A. Gonzalez de Mendoza y Dorvier, Spanish Army. In *Ejercito*, March 1941. Translated from Spanish at the Command and General Staff School, Fort Leavenworth, Kansas.]

Crossing the Rhine

After the breakthrough into France and when Paris had already fallen, the Germans decided to force the passage of the Rhine and cross through the Maginot Line.

On 15 June the river's velocity was 16.4 feet per second, and on account of high water its width was nearly a half-mile. The French did not believe a crossing was possible. The mosquito tactics appeared again.

There was a light line of fortifications on the bank of the river consisting of concrete casemates. The Maginot line itself is one and one-half to two miles behind this.

The points of embarkation were occupied at 4:00 AM. A dense fog continued throughout the operation. An artillery preparation beginning at 10:00 AM neutralized the casemates and machine-gun nests on the river bank and the small amount of field artillery. Crossing preparations lasting two hours were carried out by two regiments, a total of six groups, over a front of one to two miles.

Employing four hundred motor boats, each with a capacity of four or five men and two operators, a battalion and a company of bridge building engineers began a simultaneous crossing at 12:00 noon. When the little bridgehead was once formed, a regiment crossed over. The crossing, as in all operations, was influenced by the German doctrine of boldness and surprise.

The Germans lost two officers and twelve men.

In the Engineer School at Dessau we had the opportunity of witnessing a practice exercise in this method of river crossing. They gave the impression of an invasion of water-beetles or dragon flies. They crossed the Elbe River, which was 160 yards across with a current of 3.25 feet per second, in thirty-two seconds and, as the return was made in even less time, the round trip was made in one minute.

Many criticisms of the Rhine crossing could be offered, ranging from the assertion that the crossing did not constitute a breakthrough to the assertion that it was not sufficiently defended.

All this is true. But, we became aware of it after the operation, and the same thing probably occurred to the French in spite of the fact that in 1933 the French General, Brallion, anticipated the criticism in his book, *Military Training*, in which he emphasizes the necessity for discussion and elaboration of the mission by the commander in each particular case. He says, in part: "In a double-action command exercise on the map, a Blue division was to oppose itself, within certain limits, in the crossing of the Rhine by offensive forces. If the commander of this division had examined the problem presented, he would probably have planned, as the first result of his examination, to adopt an extended formation which would let him cover the entire opposite shore from which attacking Red elements might embark and the whole river in the division's zone of activity with as dense a fire as possible. But being obsessed with the notion of typical defense formations, this divisional commander preferred to establish an advanced position with a sentinel line, a secondary position, and main lines of defense. He established the sentinel line with outposts on the Rhine, the secondary line of defense along the position of the first counter forts one or two miles in the rear, the main line on the border of the Rhine plateau, and the artillery behind this line which was five and a half to six miles from the river. With this arrangement, modeled after the general pattern, artillery and machine-gun fire, no matter what its intensity, could not fall on the Red side of the river nor on the Rhine itself. Therefore, the enemy who planned to assault would run few risks either in the preparation for or execution of the river crossing, and the mission which had been assigned to the Blue forces, namely, to prevent the enemy from crossing the river, had been completely lost, being replaced now by a very different mission—that of breaking up the enemy forces after the crossing."

In spite of this mistake which had been brought to public attention in a professional book, the Maginot Line was established on the basis of the same error. But that does not detract from what we said before about the technique of river crossing being a form of battle between the insect and the colossus, which has been adopted as a pattern by the Germans in their tactical plans.

Training

We were even more surprised by another great secret of the German army. It surprises the military experts of every nation that a nation like France, which had attained such heights in the study of the art of war, which considered her School of War as the leading center of military instruction in the world, and which had achieved a unity of doctrine that was considered perfect, was so easily routed. Some seek the cause of the collapse in inferior equipment, others, in the poor quality of fortifications in the Maginot line, still others, in the employment of terrible new weapons by the German army. But we have reached the conclusion that France went down—apart from other various internal factors—because the execution of her tactical doctrine was not in agreement with its theory or conception. And our conclusion is that the great secret of German success is in her army's magnificent execution of even the simplest mission.

After the continental battle had been ended, the training of mobilized contingents began with the most detailed individual training. In spite of motorization, Stukas, and parachute troops, individual rifle instruction and firing practice are looked upon as of great importance in the German army and are the object of careful attention. In the Von Steck post at Spandau, which is the seat of the Instructional Division Headquarters and where, at the time of my visit, 50,000 mobilized troops were undergoing train-

ing, we watched the corporals of the squads check the accuracy of every man's aim by means of the aim checking mirror.

In the Subaltern School at Potsdam we witnessed the exercises of the aspirants for the non-commissioned officer's rank, and one of their first cares is to make them excellent rifle shots. With their rifles steadied against a tree, on the move, in an assault practice, lying down, seated, kneeling, and in all cases firing at the silhouette of a man lying down, they all have to acquire a skill which will permit them to hit this target at from 200 to 400 yards with not over 5 shots. They are all given assault practice, firing on the move and attacking mannequins with the bayonet.

This minute attention to detail in the instruction of the individual contrasts with the disdain felt in France for this kind of training. In 1935, while with a French infantry battalion, I observed how the men went to rifle practice with a hand full of cartridges loose in their pockets and which, when they reached the field, they laid on the ground and loaded them one by one in their rifles while the non-com looked over the cartridge supply which he had in a heap, without clips, to see whether all were the right caliber for the gun or were machine-rifle or machine-gun cartridges. When I mentioned my surprise at such indifference and informed the Captain of the Company that in Spain men who laid cartridges on the ground were punished and that the latter were carried in closed packages in pouches, he told me that since the advent of the machine-rifle, the ordinary rifle had received little attention and that the only reason they went to the rifle range was to obey the regulations but that they considered it of not the slightest value.

This vivid contrast can explain many things and cause one to believe that, in spite of the excellent French doctrine of war, pharisaism in all ranks of Command brought the army to the position of inferiority which led to defeat. For, even though it was Napoleon who called the art of war simple and all a matter of execution, his compatriots are not the ones who took advantage of this fact, but instead it was the Germans, who made good the old adage, "the enemy advises."

Care in execution is apparent in all the ranks and in all arms and services to such an extent that the officer-students of the Berlin School of War not only solve, as in any other country, the exercises according to the plan or in the terrain which the instructors prescribe, but also, before graduation, they must be able to plan a training exercise from beginning to end so that they may gain intimate knowledge of difficulties inherent in the execution of a plan for use when they give instruction to other officers.

And this is the great secret we discovered in the German Army. Uniform, detailed, and excellent training, the same in large as in small matters, is the secret of their faultless execution of the unchanging and eternal principles of war, which they do not pretend to have modified either in essence or application, though they have brought them to the highest limits in an execution which is not only faultless but also perfectly adapted to present day techniques and possibilities.

Summary

I. PERMANENCY OF PRINCIPLES—Napoleon, Clausewitz, Moltke, Schlieffen, Hindenburg, and Foch continue to be supreme authorities in military questions for the German Army in spite of advances in technique and variations in methods.

II. ORGANIZATION OF THE ARMY WITH A VIEW TO COMPLETE EXPLOITATION OF A VICTORY—This signifies that the only thought is not that of airplanes, tanks, and armored units—quite to the contrary. There are only two armored Army Corps in the whole of more than two hundred normal divisions. And these divisions are, as a rule, provided with horse artillery and horse-drawn regimental services to the extent that an infantry regiment has in its normal organization more than four hundred horses.

Along side this, it has its antitank cannon drawn by motor vehicles with four independent wheels capable of travelling on any terrain while carrying in addition the gun crew and ammunition.

These same divisions, whose composition is normal, are lightened, with a view to rapid occupation, and a few of them travelled on foot from Poland to the Franco-Spanish frontier. We talked with a lieutenant colonel who commanded a regiment that had marched three hundred forty-eight miles in eleven days.

They also possess infantry transported in armored cars, each provided with two machine guns, for use in the rapid occupation of areas taken by the tank units.

III. TACTICAL METHODS CALLING FOR EXTREME DARING—In this category are small groups who specialize in bold action and hand to hand fighting and whose general mission is to wipe out resistance which blocks passage of the main body of troops. The methods employed often lead to the sacrifice of a large number of men taking part in the venture, but, since they shorten the duration of the action, they are perhaps more humane in the final analysis.

IV. FAULTLESS AND PRECISE EXECUTION OF ALL MISSIONS—This includes all, from the most complicated to the simplest. It surprises one to witness the enthusiasm and seriousness with which every officer and man executes whatever assignment is given him. On the practice grounds of the School of Subalterns at Potsdam, the Lieutenant Colonel-Director of the school, a major, a captain, and two lieutenants made a detailed examination, in our presence, to determine whether or not the position of one of the men who was lying down in a mortar shell hole was correct, because, in their opinion, the enemy would have been able to see his feet from the position the enemy was supposed to be occupying.

V. EXCELLENT TRAINING OF ALL RANKS—In this training, the surrounding and atmosphere required by the situation are created. In exercise, one's own fire is not only represented, but also the enemy's fire, with different sorts of petards to represent mortar fire, artillery, etc. In actual firing exercises there are automatic arms, operated mechanically from the pit, which reply with volleys of fire to one's own units.

Stated in a few words: Perhaps the most important lesson to be learned from the German army is that if this army is organized with a view to exploitation, it is because the Germans had confidence that their army was superior to those of their enemies. And it was a superiority which they caused to issue not only from the structure of the nation, orientated in the direction of national aims in every sense of the word, but also from thorough training based on perfect discipline.

German Labor Service in Action.

[Translated and condensed from the German in *Die Woche*, Sept. 24, 1941]

The German Labor Corps has been developed into an actual military force which provides a trained reserve of manpower for the army. It is the belief of qualified observers that in occupied areas the German Labor Corps assumes duties of military nature. The fact that this corps is outfitted with steel helmets, guns and gas masks bespeaks preventive measures against guerrillas, especially in Soviet territory.—THE EDITOR.

In the east, battles are raging for the fate of Europe; but how does it look in the west? We have been on a tour through Belgium and northern and western France and have covered about twenty-five hundred miles inspecting the camps of the Reich Labor Service. Many people will say: "Oh, only the Labor Service." But we say: "The laboring man stands beside the soldier."

In going through a small French town we pass a lodging house in front of which stands a sentry. The sentry is a laboring man in the familiar brown uniform with a swastika band on the sleeve. But instead of spade and cap he carries a gun and steel helmet. The Reich Labor Service has taken up the weapon. Later on, we shall continue to see it again and again; wherever the Labor Service is brought into action—handling axe and spade as before—there are the stacked arms, and in front of them, the steel helmets. These are stacked right by the working men. It is no longer sufficient only to labor; where necessary, the work must also be defended. Thus the Reich Labor Service has become one of the pillars of our power and dominion in the entire west.

We called on a general labor leader at the headquarters of an enormous district and made the acquaintance of a man who has humorously been termed reichground marshal. The chief topics of conversation are the flyers and their airdromes. It is curious how often the conversation mentions: "Our flyers . . . We and our flyers . . ." In the camps it is the same thing; here, too, always "our flyers." From the flyers we hear it in corresponding terms. When inspecting flying fields we heard the airdrome commander as well as the flyer and the ground personnel say: "Our Labor Service . . ." "What those chaps accomplish for us. . . . !" For, the Reich Labor Service and the flyers complement each other: i.e., where one is, there also is the other. The laboring men build the flying fields, enlarging and improving the old and constructing entirely new ones. They protect against espionage, against sabotage, and also against direct English attack. We have seen on more than one flying field what these men can accomplish. The landing area has been levelled, firmly built marshy points have been drained and rendered passable, and the shelters for machines have been erected and camouflaged with ever new tricks. They have laid out whole avenues where bombs are piled up right and left, covered with revetments, earth, and effective camouflage.

Originally, and in its essence, the Reich

Labor Service is the grand instrument of education through which every young man shall learn to experience physical labor. This educational principle has by no means been dropped nowadays. This generation which we have observed out there had only to show up for its final test. These seventeen, eighteen, and nineteen-year-old boys are not soldiers at all, and yet they shall be, nay, they may be already. The result is satisfactory. The air force general, who visited the various camps with us and reviewed the workmen drilling and firing, could not conceal his satisfaction. When these boys discard the spade some day, change their uniforms, and receive the weapon of their new troop unit, they will already have the fundamentals of soldiering, i.e. discipline and the intuition of what will be required of them. The manual drills, as taught, are the least; the inward soldierly attitude is the important point. And this, all of them already possess!

The war situation prevented us from paying a visit to the Reich Labor Service in the east. There, requirements and tests have taken on quite different dimensions. Neither have the brown men of labor been spared sacrifices in blood (in the west, too, we were shown graves).

Antitank Gun Versus Tank

[In *Militär-Wochenblatt* 17 October 1941. Translated from German at the Command and General Staff School, Fort Leavenworth, Kansas.]

Rattling machine guns awaken us! Three men crawl sleepily out of the tent. A bugle call pierces the stillness. It is an air raid alarm! Men dash to cover and get their machine guns into position for antiaircraft action. The sound of our own machine guns is suddenly drowned out by the roar of an enemy scouting plane. The hostile plane, scarcely regarding our fire, calmly circles above our position near the hotly contested Albert canal. Our machine guns cease firing at the enemy. He had escaped! The thought uppermost in the minds of all of us now is what will happen to us after he makes his report.

We have been lying in wait in our antitank-gun position for a good twelve hours now. The eyes of every one of the crew are fixed on the opposite hostile shore, but there is nothing to be seen. The waters of the canal lie quietly before us. You could almost believe it was a time of peace. Only the wreckage of boats, freight cars, and bridges bespeak the destructiveness of the enemy. He had blown them up only at the last moment in his efforts to stop the advance of our armies.

A dispatch rider comes roaring in on his motorcycle. His orders are brief. The company is to assemble on a highway some 800 meters away on the other side of a wrecked bridge.

The gun attached to the limber is under way in no time. It is difficult work making our way over the narrow road beside the canal. To the right of us the woods; to the left the canal! We begin to wonder if the road is wide enough for the limber. But we haven't time to wonder long: a sudden start and the gun has come loose from the limber; however, we arrive safely at the bottom of the slope. Our driver is alert and ready to meet every situation. We get into a hole. The driver gives his motor the gas and out we come, leaping like a charging infantryman. We all draw a breath of relief. But we are soon faced with another surprise.

There are some pioneers from a bridge-building company lying under cover ahead of us. They are motioning to us, and we hardly understand the expression on their faces. They apparently want us to go on past. About the only thing they are able to say in their excitement is, "Enemy tanks ahead! The woods are under fire!" Are we finally going to establish contact with the enemy? There is no need for an order to go into position. We break all records in getting the gun ready for fire. Ammunition is being brought forward; every one is hurrying.

The outline of the hostile tank can be dimly made out in the confusion of tree trunks and branches of a small woods on the opposite side of the canal. The hands of the pioneers help us drag the gun around into position. Ranges are called out, then comes the order to fire at will. The crashing roar of our shells breaks the stillness. The smoke has scarcely cleared away when the guns roar again. But this time we are not the only ones who are firing. The enemy has also recognized us and fires his machine gun at us.

But we have the advantage. Our opponent is not able to get at us properly and we have gotten in the first and well-aimed blows. The enemy cannot ignore our work. The motors of the tank begin roaring; it is trying to escape. Two of our shots pierce one of its treads. The tank turns around in its tracks, branches and dirt are thrown high, and the air shakes with the efforts of the motors to move the mortally wounded monster. Suddenly all is quiet. The crew appears to have abandoned the fortress which they felt to be so secure, but the men are hidden from our view by the trees and brush. They seem already to have received help. Will other tanks come to their rescue and seize our prey? Our gun still keeps up a continual fire. Our shells ricochet and burst in the maze of trees and bury themselves in the trunks and branches.

Reinforcements Appear

Suddenly two tanks appear creeping along in the shelter of the houses but within our field of fire. They catch sight of us immediately. There is only one thing for us to do if our fire is to be effective and that is, change position. Their bullets are already beginning to reach us when we succeed fortunately in getting out of their range. With the assistance of the pioneers, we let the gun down the slope to its new position.

While the gun was being moved, our opponents took advantage of the short break in our fire to tow the damaged tank away. The thing we had feared had happened. Our prey had been taken from us. The gunner is no longer able to get his sights on the escaping enemy to destroy him.

Vexed and angry at having lost our booty, we ask the commander of the bridge construction company to help us across the river with our gun.

The pioneers bring up a ponton and lower it into the water. With the help of planks laid across it, a makeshift ferry is constructed.

A little hammering on the stern and the ponton floats free in the water. We hear the announcement of an arrival. It is our platoon leader, Lieutenant R. He is the first to apply himself to the task of shoving the gun onto the ferry. Everything goes off as smoothly as in maneuvers.

The ponton is still rocking. It looks as if the gun might tip over, but the men counterbalance the load with the weight of their own bodies. The pioneer carefully pushes his ponton away from the bank. We move very slowly. How easy it would be for the enemy to pour deadly fire into us now. Thoughts keep welling up in our minds regarding the enemy. We wonder about his location and strength. Seconds turn slowly to minutes. It is like a nightmare bearing down on all of us.

Finally we reach the opposite shore, and the gun is soon safe on solid ground.

We do not have to wait long for the enemy. He wanted to surprise and annihilate us sooner than we had thought. All hands help push the gun into position on the highway.

The command is shouted: "A tank, 600 meters, fire at will!" And again the roar of our gun shakes the air. "Lead by half a target breadth!" we hear above the roar. The first shell had struck to the side of the target. The gun roars again and again. Tense observation follows. The tank still continues firing. Suddenly we make a direct hit on the tank's turret. The first of the tanks immediately ceases firing.

There is, however, a second tank still on the highway. It sends burst after burst of fire at us from its machine guns. The crew of the antitank gun crouches behind the thin shield. Shell after shell is brought up and fired.

Shell after shell is sent at the enemy. Suddenly there is a cry of joy: "We got her!"

The machine guns are silent in the tanks. All our last shots had been square hits. The gun crew leaps up from behind the shield in joy. They had put in thirty minutes in a hard battle of steel against steel.

Soviet Ski Troops

[Condensed at the Command and General Staff School from Bulletin on the Soviet Union, 14 January 1942.]

Greater mobility under winter conditions has been one of the principal reasons behind the Soviet successes against the Germans during the past winter months. Russian ski troops have played an important part in achieving this mobility.—THE EDITOR.

As winter set in on the Russian front, reports became frequent that Red Army reconnaissance activities in some sectors were being performed by ski troops. Guerrilla fighters on skis were said to be hampering the Wehrmacht's retreat in December (1941—Ed). The new year brought an increase in such reports and indicated the growing importance of Soviet ski detachments for breaking through the Nazi lines, particularly in the present counter-offensives around Leningrad and Moscow. A dispatch on 7 January told of a breakthrough in the Volkhov area below Leningrad where white-clad Red Army men on skis managed to get past the German lines and kill many Nazi fighters. The Soviets tell also of a four month Odyssey during which one of their guerrilla bands, operating in the enemy's rear in Lithuania, Estonia, White Russia, and the Leningrad Region, covered over a thousand miles on foot and on skis.

Although skiing has long been a matter of necessity in the northern parts of the country, it has, under the Soviets, taken on the character of a mass sport. Its popularity has been fostered not only for its health-building and recreational aspects, but also for its social value in terms of labor and defense. Skiing in the Soviet Union has the advantage of a vast territory in the cold zones. When the snow falls it stays on the ground from three to six months and packs hard enough to meet skiing needs throughout most of the Soviet Union. Cross-country skiing on natural terrain has been particularly encouraged.

The Soviets regard this as a means of developing qualities of bravery, dexterity, iniative, and endurance.

Separate sports activities are conducted in the Red Army and the Red Navy. In 1939-40 there were over twenty-seven hundred ski clubs spread throughout the Soviet Union. It was through their functioning that the two million people drawn into skiing tests in the 1939-40 sports meets increased to four times that number in the 1941 meets. The skiing tests at these sports-meets tried thousands of the skiers in gas-masks, on ski runs studded with obstacles, in shooting, grenade throwing, hand-to-hand combat, in military style marches, and in the solution of tactical problems.

In the Red Army meets held in January and February a year ago, it was noted that after an intensive period of training in cross-country marches, climbing of obstacles, bayonet fighting, etc., one-third of the Red Army participants skied 12.4 miles in full military equipment in two hours or less. Some ninety-eight percent of the Red Army participants passed the ski-run test and were ready to engage in the cross-country ski races held by the Red Army 9-23 February throughout the Soviet Union for the Marshal Timoshenko Prizes. In the two weeks of ski races, the military areas of Moscow, the Urals, Archangel, Siberia, and Leningrad took first place in organization and number of entries.

Not only the Red Army, the trade unions, and the Komsomol (Communist Youth Society) sport organizations, but also the Soviet civilian defense society (Osoaviakhim) contributed to the country's ski consciousness and ski skill. At the same time that the other February meets were going on, Osoaviakhim members were attending weekend winter camps in suburban areas and under conditions approximating the hardships of wartime; hundreds of thousands of workers, farmers, housewives, and scientists were testing their ability to shoot on skis, render first aid, and endure long marches.

While the Red Army figures have not been made public, it is known that the civilian participants of all ages who won the sports badge in the trade union, Komsomol, collective farm, and Osoaviakhim ski-meets in February 1941 numbered five million one-hundred thousand. It is evident that when Germany attacked the Soviet Union in June 1941, she was tangling with a population of which at least twelve million had already acquired basic skiing skills and possessed skiing equipment. This equipment the Soviet Union has called in during the last few weeks for use by the Red Army. The Nazi winter donations to the Wehrmacht included little over a million pairs of skis; both in terms of equipment and widespread skiing experience it would seem highly unlikely that Hitler's forces can make the same use of ski troops that is possible for the Red Army.

Sovfoto

SOVIET SKI TROOPS ON THE MARCH WITH SLED-DRAWN MACHINE GUNS.

The Psychology of Troops In Defense.

[An article from *Allgemeine Schweizerische Militärzeitung* appearing in Spanish in *Memorial del Ejercito de Chile*, September-October 1941. Translated at the Command and General Staff School, Fort Leavenworth, Kansas.]

The first reactions of a soldier under his baptism of fire are generally of decisive importance to a body of troops. They must be thoroughly informed of the tremendous effects produced on their minds and should be well prepared to meet it.

The men should possess a more or less accurate understanding of the situation they are about to enter and also the effects produced by the various degrees of danger. Above all, the truth should never be concealed in any way from them. It is better that the men be instructed by their officers concerning these things than that they should learn them in a distorted and erroneous manner from other sources.

A look at the truth will naturally not lead the soldier into a depressed state of mind or to an attitude of fatalism. Consequently, all possible effort must be made to preserve the morale of the unit and improve it. There is nothing to be gained and it is even harmful to disregard the matter of the soldier's first impression of battle and allow the soldier to come under fire without an adequate lesson concerning the impressions he is about to experience. Each soldier should have fortified his mind in advance concerning these things.

In a calm and objective manner the officers will portray the battle in as real a manner as possible to the noncommissioned officers. The absolute lack of battle experience on the part of the soldier can be made up for in part by this description or instruction. In any case, it is better to have an approximate first hand knowledge of the truth than to be suddenly surprised by the unknown.

Without making any effort to frighten the soldier, the tenseness of the situation should be brought home to him and the chances that the unexpected may occur at any moment should be emphasized.

Turning our attention to the rear for a moment, the civil population should be made

to realize that they are still possessed of the mentality of peace times and that it will be a long time before the dangers that threaten our country disappear.

Along with this, the officers must at all times preach by setting an example as well as with mere words. Appeals to the soldiers' consciences have more weight than words.

Defense Makes Great Mental Demands

Defense, in spite of its tactical advantages and technique of fire, makes greater demands on mentality and morale than offensive operations. Movement is more stimulating; action produces a more favorable effect on morale than quietly waiting in some one position under fire. Attack and war of movement make greater demands on physical strength while defense makes less demands on physical strength but requires tenacious perseverance which is less dependent on the physical make-up than on the nervous system and mind.

Actual experience in war teaches that long-continued perserverance, especially in cases where there is no protection (which condition often obtains in defense), slowly exhausts men. In defense, the moral forces of the soldier are more exhausted, while his physical strength is only affected indirectly by the excessive nervous effort and tension.

This is why the length of stay of soldiers in the trenches is limited for physiological reasons. Lack of or insufficient shelter, lack of sanitation, and inadequate care of the body —especially the skin, impair the physical strength and reduce it considerably. Hence, periodic and complete relief or rest is strictly necessary.

Sentry duty makes the heaviest demands on the men, requiring, as it does, great mental or nervous tension and concentration.

Sentry duty and duty in observation posts must be performed in unbroken stretches without pause for rest. Concentration of attention for periods longer than two hours should not be required except in unusual circumstances. We are continually confronted with cases of fatigue which, naturally, may be effectively minimized by proper nourishment and sleep.

The same thing is found in patrol duty that calls for enormous physical exertion which, however, is relieved in part by movement.

In combat itself, when the artillery fire begins, the demands on the sentries will be still greater as a result of the roar of the guns, the bursting shells, and also the results of these latter. The chances for rest and sleep in quarters or in distant cantonments are considerably reduced even though all these matters are routine in cases of long occupancy of a position. The heavy roar of the battle combined with the effects of the fire, the men who are wounded and killed, all bring with them moments when the men are forced to grit their teeth.

Only unusual control of one's nerves and great cool-headedness enable the uninitiated soldier to face such critical moments. It is in this situation that the officers will have to make every effort to keep their men firmly in hand, especially during the first hours of battle. Habit will be formed with the passing of time, but the first hours are the decisive ones, and during them the conduct of the officers is of great importance. This means that the officer must not only lead with his example, but also, at times, must be ready to die as an example to his men.

First Battle Upsets Men Emotionally

In the first battle there are moments of madness, fear, hate, etc., which must be carefully observed. The feeling of abandonment comes over one at times under the fire of the enemy as well as dark presentiments, horror, and loathing at the sight of the first wounded, at times at sight of one's own first blood which may cause fainting and the involuntary dilation of sphincter muscles. This whole gamut of sensations may be experienced. Their continuation brings on weakness and leads to grave nervous disorders, depending on the length of their duration. Also, during those periods termed moments of calm, all these impressions may return, unexpectedly and insistently.

Lack of amusements leads to tedium and disgust. Delay of meals or insufficient food and late arrival of the field mail, perhaps due to slow service behind the lines, soon lead to discouragement.

Envy, ill-will, and belief in some imagined unfair treatment lead all too soon to a relaxation of the mental power of resistance. All this must be combatted by an understanding attitude and not merely by coercive methods, although at times severe reprimand at the right time and place works miracles. The combatting of these feelings is, therefore, one of the most important tasks of officers and non-coms of all ranks. They must take steps to promote the growth of the spirit of "cameraderie," they must see to it that the men have variety of recreation, that they are maintained in a cheerful frame of mind, and that they find some way to get the best of the disturbing impressions which may lead to discontent or a dangerous indifference. The danger of degeneration of morale is greater in the case of men who have not become used to fire than in the case of men used to all the contingencies of battle.

Moral force in the sphere of reason is also diminished. That long stay in a position with the endless recurrence of periods of sentry duty is conducive to dullness or a mental vacuity. Moral strength tends to grow less in cases of frequent and obligatory periods of idleness.

Officers of all ranks should see to it that the men do not suffer from monotony. When the men have been on duty for a great length of time, they are exposed to the danger of attempting to "kill time" by some trivial occupation or other. The officers must exhaust all their resources to prevent the nightmare of boredom from slipping into the ranks. They must watch over the mental health of the soldiers and employ all their inventiveness in the effort.

A normal nervous drain will exist only where the normal mental force is maintained; and the nervous strain in defense service constitutes a very heavy load for the mind, a load which is greatest at the beginning of hostilities. It is hard to endure a sudden demand on the physical strength such as is required in wars of movement.

Well organized minds are requisites in defense, since the momentary stimulus of battle is wanting in this case.

Hence the will power of the individual must become continually stronger till it is imbued with the realization of the greatness of the efforts which it is making for the good of society, for the nation. One valuable source of help in the realization of this end comes from the nation itself, that is to say, from the home and friends which constitute the life of the soldier. For this reason, one should employ all possible means to prevent breaking contact with them. The officers should alleviate the worries of the men by kind words and effective assistance.

At the same time it must not be forgotten that no two men are alike. Those of calmest and most balanced mentality are better suited for a war of position than persons of weak will power. The types must be selected for the various tasks of a war of position and they should be placed accordingly.

It is not only the commanding officer who should look out for the mental condition of the men but also his assistants, very particularly the doctor, chaplain, and commissary officers. All these must watch over the mental health of the soldier.

The Doctor Can Aid the Commander

The doctor who has special knowledge of psychology and psychiatry should cooperate directly with commanding officers who are not well acquainted with these matters.

Organic nerve disorders are of internal or external origin and are not greatly affected by the conditions of the war of position.

The appearance of the fear psychosis, which does not often occur but which may occur suddenly, should be carefully watched for. The disturbances caused by fear can be taken care of rapidly. Even stupor may occur in which mental changes take place leaving the man dumb and motionless. It may take days or even weeks for its treatment. Experience in actual warfare has shown that any one, even the person of most balanced mentality, may be a victim of this fear psychosis as the result of a shock caused, for instance, by trench-mortar or artillery fire, explosions, flame throwers, etc. Such persons should immediately be segregated on account of their abnormal and contagious reactions. These reactions occur as the result of some disordered innate instinct. Its magnitude depends on the violence of the external occurrences. It is particularly during the first moments of the battle that these reactions may appear in an intense form, just when the soldier is entering the unknown for the first time. Also, the entire muscular and arterial system may be impaired and altered in a more or less noticeable manner. Abnormal reflexes sometimes occur.

Fear is immediately felt by many and this must be fought in all possible manners. Physical weariness and excessive mental effort are propitious for the development of fear. Both causes must be fought and mastered.

One of the most effective means of combatting fear is attention to the soldier's well-being. Everything within the bounds of possibility must be done to improve the condition of the men as regards their food and quarters. The increase of mental strength and decrease of the feeling of fear must be regarded as fundamentals. Discipline has more value in this direction than any other, and this must be implanted and developed with the meaning of faithful discharge of duty. Appeal should be made to moral considerations but more still to the soldier's beliefs, and his religious faith. In all this the influence of the chaplain is enormous.

Special attention should be given to any freak individuals in the unit, persons of weak character who are partly abnormal. It is worth while to get acquainted with them at an early moment and watch them carefully. In the long run these persons may have a negative influence on the minds and morale of their comrades. They are frequently the authors of rumors and not infrequently the cause of panic. Panic, acting on the mass of men and producing strong mental disturbances, may suddenly be the cause of some mad manifestation of consciousness or thought. Panic grows in war. Officers in command of troops should be aware of this fact. This realization constitutes the first step toward its suppression. The subject of panic belongs to the domain of mass psychology.

A unit in the grip of panic will react to nothing less than another more impressive occurrence. An opportune word, a harsh reprimand, personal example, or the strains of a military band can work miracles.

Great importance should be attached to all these matters. But the brave example of the officer who is interested in even the most trifling detail of his men's existence, is always decisive.

The fact cannot be too strongly emphasized: the mind of the officer should maintain an intimate contact with the hearts of his men.

Notes for Young Officers on Leadership

[From *The Journal of the Royal Artillery*, January 1942.]

The "democratization" of the British Army has been a subject of wide journalistic discussion in recent years on both sides of the Atlantic. This article illustrates the modern trend in officer-enlisted man relations in Great Britain, produced by the increasement of many new officers, fresh from civilian life.—THE EDITOR.

Since the beginning of the war the army has multiplied its strength enormously, producing every few months large increases of officers and men. These officers and men have come from civil life with, in most cases, little or no previous knowledge or experience of military life and conditions. In so far as officers are concerned, they have not had much opportunity of handling men, and their time of training is necessarily largely occupied in learning the technical side of their new profession. While an officer requires to know his job technically, the discipline of the army is based on the leadership of men, and at the outset of his commissioned service a subaltern requires to give special thought to the subject of leadership and carefully study man-management in order that from the start he may develop along the proper lines and acquire qualities that will eventually become habitual.

The following notes are based on the experience of the writer over the past 24 years including service in the ranks during the last war. They are not official but merely personal impressions, and are given in the hope that they may be found useful in guiding young officers on to the lines that may lead to the mutual enjoyment of confidence and respect between officers and men, which is the basis of our form of discipline.

General Attitude of Men to Officers.

When a civilian is grasped by the military machine, his mind usually contains a certain amount of nervous apprehension and he is keenly sensitive to first impressions. The first two months may make or ruin a soldier. To the average British working man, the autocratic system of discipline is quite alien to all his instincts and offends his principles of democracy. Officers may, therefore, have certain prejudices to overcome.

(1) Authority in the army appears to the recruit in the shape of "the officers" belonging to the same "class" as the industrial "bosses." This class has often been represented to him as one that would invariably do him down in civil life but for the protection of his Trade Unions. This attitude may not always be expressed, but sub-consciously it does prevail in the minds of the great majority of recruits.

(2) The officer still has the reputation of having the advantage of wealth. To a man who has never known security, money means a lot. Although the officer today is often in straightened circumstances, the soldier sees in him a person who has never known the privation of poverty.

(3) The officer has had the advantage of education. Whatever different value your teachers and friends put on your education, your men feel that again you have taken advantage of them and are able to express yourself and obtain greater benefits and all without taking off your coat or dirtying your hands. You are enabled to twist things round and be clever, and cleverness raises suspicions. Education means almost more than money to a man who is uneducated.

(4) Again, the officer is given privileges. Why, the recruit wonders, must he rise to his feet to salute an officer as he passes and call him "sir"? Is he not as good a man as the officer? Is this not supposed to be a free democratic country, which is fighting for the principles of democracy? He learns that the officers have an officers' mess, with presumably sumptuous food, unlimited wines and luxurious quarters, compared with the mess tins, canteen beer and overcrowded huts of the men.

These prejudices require to be and invariably are overcome, but until they are, the subconscious resentment will remain in the men's mind. The methods of overcoming them are:

(a) In respect of the antagonism to officers as a class, the officer must go out of his way to know the men personally and let them get to know him and see that he is not really such a bad fellow after all. Also, it is necessary to show the men that you are not there to "down" them or take advantage of them, but on the contrary to help them and look after them.

(b) In respect of wealth, most officers are not wealthy, but it is bad form to make a display of any superior financial means to others not so fortunately placed. An officer should not splash wealth obviously on himself or his men.

(c) In respect of education, let it be seen that you will use your educational ability for the men's benefit, pleading their cause, and seeing that they get fair play.

(d) In regard to privileges, come down off your perch, and throw off your privileges occasionally. Speak as man to man, and show that the privileges are just a form and that you can maintain your dignity and respect without them. By doing so, you strengthen your position enormously. What you demanded compulsorily becomes given you voluntarily. A soldier is not really anxious that the status of his officer should be lowered.

A young officer on being posted to a unit may be placed in command of trained soldiers, and their attitude is rather different. They are critical and judge you by the standard of the other officers with whom they have served. It is fatal to pose or assume knowledge you do not possess. The old soldier see quite clearly through your dodges and subterfuges. He feels superior to you. He may have longer service which gives him a feeling of superiority. He probably knows regulations and procedure in certain respects as well as, if not better than, yourself; and if you maintain dignity on the basis of inferior knowledge, he damns you straight away as an imposter and dishonest. You are on probation till you prove yourself. If, on the other hand, he sees you are honest and of the right stuff, he feels no ill-will and if he sees you are trying to help him, he will try to help you till you eventually become experienced and firm in the saddle with mutual trust and confidence established.

It is always necessary to prove your worth to hold the King's Commission, to be willingly accepted by men as worthy to be their leader. It has been said, "The private soldier is the measure of the officer's worth,"—that is, your troops will reflect your ability and character.

Leadership.

Having acquired a command and got men to look after, how can an officer make the best of the association between officers and men? He has to train his men, maintain discipline and prepare them to accompany him in warfare, all no doubt under the direction and supervision of higher authority, but it is he who is responsible for his men. Discipline is based on leadership, and the leadership by comparatively junior officers of their men is the most common, as the higher in rank officer is, the less he is able to know his men. It is therefore vitally important that junior officers should be able to lead. Some men are "born leaders." The presumption is that others are not, and that these others form a majority. How then can civilians, who have had some months only of military training before passing through an O.C.T.U., who have not been accustomed to handling men, and who are not "born leaders" but just average educated men, acquire power to lead men into the face of machine-gun bullets and to hold them in a bombing attack? What are the requirements of Leadership? The main essential would appear to be "an ability to make others follow you and to think and do as you want them to." The important word is "follow." What then will make men follow you? I suggest the following:—

1. Confidence in your superior knowledge and your judgment, i.e., a quality of "brain."
2. Liking, respect, devotion, i.e., a quality of "heart."
3. Bravery and personality.
4. Custom, habit, esprit de corps, public opinion.
5. Realization that there is safety in numbers and working as a team.

There may be other qualities or reasons. It is not a subject on which one can be dogmatic. If you think of other reasons, try to see how far these other qualities are "born" in one and how far they can be acquired or developed. To my mind the first two qualities mentioned above are the most important, i.e., knowledge of your job as an officer, and having the affection of your men, and I maintain that both qualities are necessary, that one is insufficient without the other. On this assumption, can the above qualities be developed? Some of us have them more developed than others due to the nature of one's upbringing, early life, occupation and enviroment. An officer is assumed to possess a certain standard of education and brain, and ought to make himself efficient in his job to inspire confidence in his superior knowledge and judgment, and most of his military education is directed to this end.

There remains the task of inspiring the affection of his men. I do not leave out of account the quality of bravery. It is necessary that officers should not show fear. Reckless disregard of one's safety on the other hand will not induce men to follow, as they will argue that if you are so reckless of your own safety you will be equally reckless with theirs. I suggest that most of us have been born with all the above qualities pertaining to leadership and that it is entirely up to us how far we develop them. How we can best do so is an individual problem which each one must solve in his own way. The process is not so much a difficult one as a tedious one. It is the development of habits to which one may not have been accustomed, and few things are so hard as self-discipline. It is fatal to imagine oneself as a leader or a born leader. Somehow or other, people who consider themselves leaders have a higher opinion of their qualities than other have.

Qualities of Brain.

Knowledge is power and confidence combined. Sir Chas. Napier says "A man cannot learn his profession without constant study. When in a post of responsibility he has no time to read, and if he comes to such a post with an empty skull, it is then too late to fill it." It is a great advantage to have a well stocked mind. Read biographies, memoirs and historical novels to get at the flesh and blood of wars, not the skeleton. Be enquiring and acquisitive. You must have knowledge of your own job. Cultivate a good word of command. Don't give wrong orders. Don't lose your way and lead a convoy down a wrong road. While instructing or supervising instruction, show quietly that you have a sound knowledge of your weapons. Show by your actions that you have a sound knowledge of administration, procedure, pay, and all that affects a soldier. In this way, your men will acquire confidence in your superior knowledge and judgment. Add to this short talks to the men, at breaks, on subjects of military interest. All officers should have a mind suffici-

ently well stocked to be able to give short impromptu lectures. Short talks are more informal and provide the means of getting over what you want to say more effectively than boring men with a set lecture. Your men get to know you this way, and you can usually judge their response and get to know them more closely. They also get to know what you want, your views, how you judge values, and are able more easily to carry out your wishes. Don't be ashamed to show them your character.

Again, continually be thinking up training schemes and ideas for improving the efficiency of your men and the lessons you want brought out, so that when opportunity occurs you have the scheme ready to lay on at short notice. Make the NCO's and men feel that they are really learning and gaining knowledge. Men like to feel that their intelligence is being drawn out and that their capabilities are being properly and fully used. Sometimes they surprise themselves at the progress they achieve and are duly grateful. There is no greater antidote to boredom and indiscipline than interesting and realistic training. Just as knowledge gives you self-confidence, so does knowledge produce self-confidence in the men themselves, and self confidence in themselves and their weapons provides courage in the face of the enemy.

To provide a full day's training for your men of, say, six hours, it is, however, necessary for the officer to work twelve hours. If your ideas lag, read up training memoranda and pamphlets, which give very useful suggestions, or discuss ideas with other officers, but it is up to you to give your men full measure of useful training in an interesting way. It is a matter of using your brains. You must cudgel them, and you must think ahead. Foresight and forethought are invaluable, and you can train yourself to think ahead. Try to anticipate orders. Think what is likely to happen and what you had better do or get in advance. Cultivate the habit of appreciating the situation, whether the situation be tactical or administrative. If you are doubtful what will happen, prepare for the worst, and if it happens, it will be so much the easier. Remember it is *your* brain you depend on, and that your men also depend on, so be forever sharpening it and never get it blunt or fuddled.

Qualities of Heart.

To achieve leadership, an officer must acquire the respect and liking of his men. A gunner of Napoleon's Imperial Guard wrote to his commanding officer after the Peninsular War as follows: "The main thing, say I, is to make oneself liked by the soldier, because if the colonel is disliked, no one is extra keen to get himself killed by the order of someone he detests. You were severe certainly, but just; no word louder than the other, no cursing or flying into a temper; in short, you used to speak to a soldier as if *he* had been your equal. There are officers who speak to soldiers as if they were equals of the *soldiers*, but that is no good at all, is what I say."

The first requirement is to get to know your men, and know them intimately, know their characters, abilities and weaknesses, and how each of them would react to varying situations. It is difficult to obtain this knowledge on account of lack of suitable opportunities of meeting men informally. One does not learn men's characters intimately on parade, and off parade one hesitates to intrude into their preserves. There are also so many and varied calls on an officer's time, that unless he definitely sets himself to make opportunities to know his men, he will seldom acquire the necessary knowledge. The following are some suggestions:

(1) Make some ostensible excuse to visit men's billets after parade, and after attending to the matter of your visit, remain and chat for a few minutes, offering cigarettes and making general conversation on some subject of topical interest (e.g., leave, sport, home and families). Allow the men to take the lead in conversation and give them the opportunity of bringing out anything on their minds. Even if the men don't take the cue, it has exhibited friendliness and may prompt some man to summon up courage to speak to you on some other occasion. Beware of overstaying your welcome.

(2) On your daily contacts with NCO's and men, end up with some general remarks giving the lead for them to take the initiative, i.e. lower the formal barrier for a bit. You only can do so. The men can not approach you other than formally.

(3) Make a point—almost a show—of attending immediately to any affair of your men that crops up, when you are otherwise engaged, e.g., if you are fortunate enough to be going out in the evening, and just as you are setting off, Gnr. — is stated to have received a letter from his wife and wants compassionate leave, don't defer the job, but make a point of attending to the matter there and now, and if Gnr. — comes back from leave wearing a black band on his arm, you will be glad you put his affairs before your own pleasures. This attention to your men's interests can't help spreading amongst them, and they will think a lot of an officer who invariably places his men's interest before his own.

(4) Don't forget your men in hospital. They are still your men. Let them feel that you are remembering them, by paying them a personal visit and ascertain how they are and whether they are getting their food hot and up in time. If you take them some magazines or cigarettes, so much the better.

(5) Probably the quickest way to get to know your men is through sport. Play games with the men if you possibly can. You see quite a different view of them on the football ground. They think a lot of an officer who joins in their games. Games are democratic, and if you join in you cannot stand on your dignity or maintain an officer's privileges, and they consider it sporting of you to meet them on equal terms. If you don't play yourself, the next best thing is to take a real interest in sports. There is no shorter cut to men's hearts. They require to have things organized for them, and they do appreciate the fact that you voluntarily give up your spare time to organize their recreation, when you are under no orders to do so and might quite as easily have gone off to play tennis or golf yourself. You can also cultivate the men's sporting instinct, team work and the spirit of playing the game.

(6) Keep a book with the men's home addresses, their civilian occupation (some men have various occupations or qualifications) number of children if married, previous service and whether they are Regulars, Reservists, T.A., Militia, or Army Class Intake. Let them be aware, by casual remarks that you do know their circumstances.

(7) Get under the skin of men who have had punishment by showing them after they have finished their sentence that there is no ill-feeling. If a man is hard up after detention and you consider the circumstances suitable, see if it is possible to help him in any way by allotting him tickets for concerts, etc., or a share of any free issue of cigarettes or gifts of clothing.

(8) Know which men you can rely on to give an honest opinion about things in your command—men who you know trust you, and possibly to whom you have done a good turn in the past. Men will not speak to you frankly unless there is the utmost confidence between you. Your servant should be encouraged to speak to you about things in general, and you can always ask him about what the men think of their messing.

(9) If you are on duty at night with men, you can take the opportunity of knowing them more closely. If they are lonely and quiet, they will usually be quite eager to engage in conversation and tell you about themselves, and things in general.

Knowing Character Is Important

The more one knows of the men's characters, the easier will it be to handle them. Unless they feel that you are sympathetic, however, they will be reserved. If you have their confidence, they will come to you with their problems. Men are usually disinclined to make complaints in the normal manner and are inclined to suffer in silence until things become so difficult that some act occurs requiring disciplinary attention and is only then brought to the officer's notice. By this time the issue may be so confused that it is difficult to spot the original slackness. This ought not to occur if the officer is keeping his pulse on the temper and feeling among his men. It is a reflection that frequently officers are the last to be aware of the undercurrents and irritations felt by their men. Informal chats with the men form a safety valve. It is a good plan to seek suggestions from the NCO's and men themselves. Suggestions and ideas are well worth encouraging. The Padre can often help you in regard to the men's morale and feelings. If you know your men's characters and are in touch with what they are feeling, you are in a position to stop trouble before it arises. It is the essence of discipline to prevent trouble arising, rather than to deal with it after it has arisen.

Men want some visible protection from a rigid soulless system, and you should provide this. Men are the raw materials of your trade, and you must know them and have a genuine interest in them. The soldier is likable and the more you know him the more you like him. Once you have been in action with him and seen him overcoming his fear in the same way as you, putting up with wretched conditions, remaining cheery, and prepared to resist and stick it out with you, you will realize that the very least you can do is to vow that, come what may, you will not let your men down, and that their welfare will be your first aim and object always. This is the feeling of most officers who have had experience of their men standing by them in the war. Active service gives one opportunities of knowing the men's inmost qualities, and they get to know yours. You can do more by force of example than all the lectures in the world. The eye takes in more lasting impressions than the ear, impressions that bear the stamp of genuineness. You are always in the limelight to your men, and they talk about you and compare you with others. Never play to the gallery. The sure way to lose popularity is to seek it. If you are ever in doubt as to comportment in personal matters, ask yourself whether it would be permitted to your men and if it would not be allowed for the men, do not do so yourself.

An officer need not, and ought not to "fuss" over his men in the sense of continually interfering with them in trifling matters. They do not want a governess, but you do stand in *loco parentis*, and it is possible to help and guide them without fussing. Similarly "pampering men" implies lack of self-reliance; on the contrary, an officer must foster self-reliance in his men, and his efforts must be directed to this end. Looking after men does not at all imply allowing them to do what they want, or "spoiling" them. It is frequently necessary to make them do what they dislike, or even what they think is an unfair share of work; for example, after their work has been done, you may make them help in the work of another party that still requires to be done. It is necessary to make the men unselfish, and willing to cooperate with and help others.

It is good practical training to force your men to do the little extra, after a tiring day. Eventually you will have to lead those men in the face of the enemy when a lot extra will be required, and if they are prepared in their training to respond to unwelcome orders, it will be less hard when it comes to

the real thing. Obedience to pleasant or routine orders is no test of discipline, but obedience to unpleasant orders is a test both of discipline, and of the leader. The more you ask of your men in the way of effort and resistance, the more must you see to their comfort and welfare, and a good officer will ask a lot *from* his men, at the same time doing a lot *for* them. You cannot ask without giving, and you ought to give before asking.

All this business of looking after one's men and acquiring their confidence is not altruistic. Besides the duty we owe in looking after them, it forms the basis of discipline. It ensures the ready response for the extra bit of effort when required. If men remember the times you have gone out of your way to help them and that you always put their interests before your own, you have made them your debtors and your appeal has more authority and force, as few men like not to repay debts of this kind. In addition, it will make a permanent impression on the man's mind, which will remain after his return to civil life and industrial or class strife.

In the "Regulations for the Rifle Corps" issued so long ago as 1800 we find the following instruction: "A full acquaintance of the soldiers' characters by their officers, a strong example of good conduct on their part and a steady unchangeable mode of authority towards those who are under their orders, because it is certainly the best plan for maintaining discipline, this mode prevents evil being done, and all preventions are worth ten corrections."

I believe that if you conscientiously develop the above two qualities of knowledge on the one hand, together with confidence, or even affection, of your men on the other, you may be on your way to being a leader, and provided that you never expect it, it may one day be said of you "He was a — — good officer."

Hygiene and the March.

[From an article by Major Frederic Evans, British Army, in the *Journal of the Royal Service Institution*, November, 1941. Condensed at the Command and General Staff School, Fort Leavenworth, Kansas.]

In spite of the mechanization of the army, marching is still the most essential means of locomotion for the soldier. Training in marching and in march discipline is therefore important. Just as the practice of hygiene is necessary in the camp and the bivouac, so is it part also of discipline on the march and associated with training for the march.

The recruit is prepared for the march by intelligent training after he has been selected as physically fit for his arm of the service, and the medical officer advises any special action or treatment for recruits who may temporarily be below par. Right training is essential for marching as it is a communal act in which the soldier has to adapt his stride and pace to an average. The average length of a man's pace being about 27 inches, most recruits need careful development while increasing the length of step to 30 inches.

For the ultimate in marching performance, well-planned training is essential. A young recruit may have a pulse increase of nearly seventy-two beats and a temperature rise of about 2.2 degrees F. after a stiff march. Only three weeks of sound training and the pulse rate increases but twenty-eight beats and the temperature rises only 0.6 degrees F.—just enough to provide for the increased demand of energy required by the march. Arms should not be swung too high; for the hand to reach up to and not above the waist-line is sufficient.

Since sore feet can increase the energy demands on a march by as much as twenty percent and raise the body temperature by 1 degree F., it follows that care of the soldier's feet is one of the most important ancillary activities in his training. Feet should be inspected regularly and abnormal conditions reported to the medical officer.

Proper fitting and care of shoes and socks is another prerequisite for successful marching. Army shoes should be fitted with the soldier carrying a load equivalent to full marching order, and socks should provide just enough room for the toes to move freely within the blocked toe of the army shoe. Further, socks should be washed regularly and in an intelligent manner.

Proper Clothing Required

Clothing must be unobtrusive; there must be freedom of movement and protection against heat and cold. There must be no tight spots and no chafing. Modern battledress can be opened up easily for ventilation; it is loose, with contained layers of air as insulation against excessive heat and cold. The gaiter is an improvement on the puttee or wrap legging which was heavier and apt to constrict circulation of blood in the legs.

It has been suggested that in hot countries the tropical clothing should be worn with no tight belt, but instead that the shorts be buttoned to the shirt or held by braces in such manner that the breeze can blow up the tubes of the shorts and exit freely from the open neck and short sleeves.

Only authorized kit and equipment should be carried by the soldier, and his pack should be carried as high as possible on the shoulders, allowing room for a rolled raincoat. During the short march rests, the pack and belt should be removed.

The optimum load for the average human being is about thirty percent of his body weight. For a one hundred forty pound man, this would be forty-two pounds; however, this load can be increased to fifty-five pounds and it is well within the compass of even the lighter trained men.

A long march should be the subject of careful planning, and the standard routine must be followed or borne in mind. There should be an elimination by medical officers of men who are obviously unfit and unable to last out the march. The march should be by day unless there are tactical reasons to the contrary, for night marches are more exhausting than day marches and tend to create depression. The march should be started early enough to enable most of it to be carried out before the heat of the day; however, the start should not be so early that the troops are deprived of a good night's sleep or that cooks and duty men must rise too early. Too, sufficient time should be allowed for the men to visit latrines and get their equipment in order.

A heavy meal is not desirable before sustained physical exertion like a long march. The requirement is for an easily digested meal of energy-giving foods which will sustain the soldier until the mid-day halt. The ration for the mid-day meal should be as attractive and varied as possible.

The light breakfast enabling an earlier start than would be possible after a heavy meal, the "fall in" should be timed so that, when all men have been checked over and accounted for, the unit will move off without delay. It is irritating and exhausting to stand waiting in full marching order because of faulty organization and planning by those in command.

When the march has started, the full quick step should not be required for the first twenty minutes or so. This period will give all the joints a chance to loosen up and enable the men to find the appropriate communal rhythm. The men should be given a halt of five minutes at the end of this period and be permitted to adjust equipment or, if they have missed the latrine earlier, to attend to the calls of nature.

During the march halts, each man must be his own sanitary orderly. Urine probably does no great harm behind a hedge or in a shady copse, but faeces should be buried in order to make them inaccessible to flies and unobjectionable on aesthetic grounds.

Variety in the March

Variety is desirable in marching, and after the "march at attention" will follow the "march at ease." The singing of marching songs and the cracking of jokes should be allowed; however, if the men must sing ribald songs, let it be done on the lonely stretches of road. An occasional change to "march at attention" helps provide varitey.

One hygienic problem which has to be solved on the march is the dissapation of excess heat, especially in hot weather. A man uses five times as many calories on the march as he uses when at rest. One-third of these calories are used up in the work done and two-thirds are given off as heat. This excess heat is normally dispersed through the process of perspiration; thus the body surfaces must be ventilated as much as possible with currents of air to facilitate this evaporation of sweat. The three-rank method of marching provides for greater ventilation than the old columns of four used to do. It will be well to give the middle rank a change and put the men on the outside. Also, the men in the rear of the colmun should be given a chance at marching in front, for it has been demonstrated that the rear ranks of a column may use up six percent more energy than those in front. Other lesser cooling processes are through evaporation of water in the breath and by passage of urine and faeces.

As a result of perspiration evaporation, it follows that the quantity of liquid in the body will fall on the march. About one quart of water is lost during a march of seven and a half miles. Its replacement appears to be desirable. For the first seven and a half miles no drinking from canteens or any other source is allowed because the liquid imbibed at breakfast and those already in the body are sufficient and to spare. From here on, however, a little water at a time can be ingested at each halt, the quart being made to last until the fifteen mile point is reached. The fifteen-mile mark is usually achieved at mid-day.

Sucking of a pebble or chewing of gum can be allowed on the march, but no smoking should be permitted until after the noon ration is eaten. The canteens can be filled again at this time. If the march is longer than twenty-two and a half miles, a third filling of canteens may be necessary. Water from unofficial sources must not be used.

This conventional water discipline is not always followed. The tendency seems to be towards the elimination of drinking as far as possible on the march. The experience of commanding officers and medical officers on this point would be of great interest.

At the mid-day halt of one hour, improvised sanitary arrangements will be necessary and are possible on a group system. For each convenient body of men a site should be selected, and a suitable number of shallow trench latrines—three feet long, one foot wide and two feet deep—should be dug. The digging tool should be left at the site for each user to cover up his own excreta with fresh soil. Shallow urine pits, with turf removed to a depth of about six inches and sub-soil loosened for another six inches, should be made as well. Shallow pits for refuse must also be dug and all refuse collected into the pits before the unit recommences its march. All of the sanitary elements should be filled in just before the unit moves off and the turf hammered hard into its old position. If possible, the

site should be marked with stones laid out as a letter L—for latrines. This will prevent its use too soon again.

Because of the modern wider dispersal of troops on the march, these sanitary arrangements must be sectionized and done, so far as is practicable, by men carried on a vehicle rather than by men who have to march.

At the halts, the men should divest themselves of their equipment, keeping their gas masks close at hand. They should relax completely and use the shade on hot days. Care should be taken that crops and fences are not disturbed or damaged when sanitary areas for mid-day halts are provided. A previous reconnaissance of the route will be of obvious value. If there are alternative routes, the most suitable and most shaded route should be selected.

The advance party with, perhaps, the medical officer should reach the camp or bivouac site sufficiently before the troops to accomplish the necessary sanitary preparations. It is important that latrines and urinals are available in sufficient number for the men on their arrival in camp.

When they arrive at camp, it is advisable to provide the men with some sweetened drink which will provide immediate energy through the soluble carbohydrate of the sugar. Then should follow essential camp duties and fatigue. After that the men should wash themselves, especially their feet, and a foot inspection should follow immediately. Finally the hot meal of the day is served, and after this the marchers draw their blankets and enjoy a well earned rest. In the routine of the march, the practice of hygiene is not only essential for reason of health and well-being, but also to safeguard the fighting efficiency of the column, enabling it to arrive fit and ready for any emergency.

A Visit to the Japanese Military Academy.

[By Col. Osvaldo Valencia Zapata in *Memorial del Ejercito de Chile*, November-December, 1941. Translated from the Spanish at the Command and General Staff School, Fort Leavenworth, Kansas.]

During my two months' stay in Japan I visited numerous establishments and institutions of a military, industrial, and educational character. Among these, I consider the visit to the Military Academy interesting. This is a modern institution which should be regarded and studied as one of the best examples of institutions of its kind.

It should be stated that there are eight or ten preparatory military schools in Japan where Japanese youths acquire a general and military education. The students graduated from these preparatory schools go to the Military Academy to complete their studies, and there they remain two years before being commissioned.

The school is located in the open country with no immediate contact with centers of population, and some two and a half miles from the small village which has the railroad station. The whole group of buildings is visible from a distance. The country surrounding it is the typical Japanese countryside. This location was chosen by the Emperor who took into account that the beauty of the surroundings would also play its part in shaping the minds of these future leaders of men.

A Fencing Exhibition

First I was taken to a fencing exhibition. This took place in the big school gymnasium, a rectangular structure one hundred and sixty-five by sixty-five feet with its longest dimensions running north and south. There was an altar on the east side where the group bowed reverently on entering, for it possessed Shinto significance.

On the north side of the room was the section occupied by students who were to take part in the exercises. The school officers were in a similar section on the south side. A captain, who had charge of the students' section, called the roll and the exercises began. It was a demonstration of classical Japanese fencing as it was practiced by the ancient Samurai. I witnessed matches where the men fought with their chests bared, with no protection at all, and armed with large sharp swords gripped with both hands. They exchanged savage blows without parrying them, permitting them to come so close to their heads and bodies that the slightest miscalculation might have been fatal. This was done to show their mastery of sword combat and their confidence in themselves. On other occasions the blows were parried quickly and accurately. My attention was attracted by the mystic air of the spectators and the bellicose and proud postures assumed by the participants when they deliver or parry a blow, which is always accompanied by an imposing and impressive war cry.

After the fight with real swords, came an exhibition by fencers armed with strong bars of wood representing the sabre and bayonet. This time the participants were protected by masks, helmets and chest shields. Combats were shown between two riflemen and two men armed with sabers. These elements were combined to form a fight between a team of two riflemen and a single rifleman, two men armed with sabers against a single rifleman, etc.

One observes in this tourney a display of stupendous energy and agility and wonderful powers of decision. The participants are fairly tall of stature, robust, full of energy, and they execute the orders of the directing official with great speed.

This phase of the exhibition was finished by a demonstration of the edge and other qualities of the swords employed. In fact, several bundles of willow branches, tightly bound together and wrapped in straw, were placed on supports or suspended. The swordsmen exhibited the temper and edge of their weapons by cutting them in two with accurate blows as if to show the danger and results which would have followed a badly calculated or poorly parried blow.

An interpreter explained to me the significance, tradition, and influence which the exhibition we had just witnessed had in the psychological education of the officer. He said to me: "The Japanese officer prepares to die heroically. For this purpose he must acquire contempt for life, the mastery of his mind over material things, and the skill to fight well." This is a deep philosophy which is very characteristic of the oriental mind or, rather, of the Japanese who sacrifices material benefits, personal welfare, and even life for the sake of his country.

A Tour of the Buildings

After the fencing exhibition I was shown the most important parts of the institution: namely, those features having to do directly with the cadets, such as dormitories, study halls, medical facilities, supply stores, arsenals, places for keeping equipment, temple, etc.

The companies and other units which constitute the school are housed in plain, two-story wooden barracks.

It should be borne in mind that wood and other light material is employed in the majority of Japanese buildings for reasons of economy and for protection against earthquakes.

The exterior appearance of the buildings is faultless. Their interiors have a double lining of wood, and the workmanship evidenced lends them the appearance of simple elegance.

The dormitories are particularly clean and neat, and rigorous order is observed everywhere. The extent to which the men live in an atmosphere truly proper to soldiers is very noticeable. The study halls, with their individual desks and shelves for books and other necessary equipment, are not far from the dormitories. Each division of cadets has its own medical and bathing facilities, armories, and clothing and equipment stores.

After this, I was taken to the cadet "Casino," a large structure somewhat apart from the rest of the cadets' buildings. It also is a genuinely Japanese structure of wood construction. It is divided into a series of small rooms where the students enjoy their hours of repose in a familiar atmosphere very similar to that of the traditional Japanese home. The floor of each room is covered with "tatami," a kind of matting of very fine straw. The walls are adorned with autographs of great military chiefs and past directors. This is calculated to increase military virtues and patriotism in the future officers.

All the rooms are connected by sliding doors of frail and delicate construction. The doors leading to the exterior are of the same type.

The furniture is very plain. In each of the rooms there are one or two small, square tables surrounded with cushions where the students sit in the oriental style to write letters or to amuse themselves in reading or playing games.

According to Japanese custom, it is necessary to remove one's shoes before entering a room. For this there are benches beside all the entrances.

The assistant director of the Academy explained that in the construction of the "Casino" the effort was made to maintain the Japanese style as a means of perpetuating in the students the ancient traditions which rule the Japanese household.

The Temple Is Visited

At 12:15 PM, the director informed me that it was now lunch hour, but that he wished to take me to see the temple before eating. The group set off toward a small hill located on the extreme eastern edge of the academy grounds. From a distance it looked like a beautiful park filled with Japanese pines which are always green and of classical silhouette. A long, broad flight of stone steps led us to the summit which was elliptical in its contour and surrounded by dense foliage.

In the center of this ellipse rises a small Shinto temple where all the symbols of this belief are to be found. In front of the temple is a fountain where I was invited to wash my mouth and hands in order to enter the temple purified by the water. The other members of the group did the same. They then approached the symbols and prostrated themselves before them for several moments.

My attention was called to a monument which supported a large horizontal disc,. This monument was of stone and had arrows pointing in every direction, the whole resembling a sun dial. The Director explained to me that every morning, without exception and before beginning the daily program, the students come to the temple to renew their oath of loyalty to the Emperor and the nation and to pray that the divinity will grant them strength and courage to fulfill their military duties and to die gloriously. The arrows engraved in the disc point to the geographical location of the imperial palace (the largest arrow), the locations of the main theaters of war in China, and to the principal cities of Japan, Korea and Manchukuo. After renewing their oaths, the students proceed in the direction of the arrow which indicates the position of

the Emperor, prostrate themselves, and pray for his health and the success of his divine and human mission. After this, each one turns in the direction of the arrow which indicates the location of his family and prays similarly.

In all the other establishments, factories, and schools which I visited, the same ritual is observed before beginning the day's work.

It was explained to me that the Japanese pray to their gods through the medium of their emperor who represents to them the spiritual father of the Japanese race. Through his mediation, they pray for national progress, for its institutions, for the prosperity of their families and friends, but never for themselves nor for liberation from their own troubles and suffering. They disregard their own person absolutely.

It is easy to understand the great influence of this religion on the progress of the Japanese people and their spirit of sacrifice. Religion is the mental mortar of the Japanese race. Foreign objects and ideas are adopted to the extent of their worth, but are not permitted to usurp the place of every thing Japanese. In this way, Japanese civilization continues in its original form and maintains its own traditions and personality. For this reason, philosophical, political, social, and military doctrines imported from other countries have encountered an impassable barrier in Japan. The Japanese adopt from them what is useful and reject all that is out of place in their life or that would alter the traditional structure of their country.

The Hall of Honor

After 2:00 PM, we went to the Hall of Honor, a large isolated building of the same external style as the others but of reinforced concrete construction. The interior of the building forms a great amphitheater with a seating capacity of a thousand persons and with a large proscenium. The walls and ceiling are artistically decorated with Japanese motives.

It was explained that this room is for the celebration of great patriotic and academic events. Once a year the Emperor comes to solemnize the ceremony of the appointment of new officers. He enters the room through the central door, which is opened only for him and on this occasion, and takes his place on the proscenium from which he makes the appointments and hands over the insignia of the young officers.

In this hall, addresses on moral matters are also given to the whole student body, and here occur all those gatherings calculated to exalt the sense of honor and increase the spirit of sacrifice and dignity of the profession of arms.

The automobiles, which were to take us to the Drill Field that is off to one side of the grounds, were waiting for us at the door of the Hall of Honor. We saw the various groups of cadets being given practical training. First we watched a group working at applied gymnastics consisting of obstacle work. I could not help noting a series of feats in connection with a wall about sixteen feet in height. The students scaled it in various ways, using ropes, inclined planes, ladders, etc., and hurled themselves down from its summit in spectacular manners such as might be employed by participants in an aquatic meet. But the remarkable thing about it was the correct manner in which they landed on a soft and sandy ground. A large pool formed an integral part of this section of the field. At one of its ends was erected a structure resembling the bow of a ship with its rope ladders and other equipment used by sailors for boarding a ship away from the wharf during an emergency. I was informed that on account of the nature of Japanese military operations, this kind of exercise was also practiced.

Afterwards we observed one group of rifle troops practicing with sub-machine guns; another group, with heavy machine guns; an infantry gun section; a radio section; a ground telegraph section; an infantry mortar section; and a motorcycle section. These groups were conveniently distributed over the field. The rifle unit and the heavy infantry weapons units were practicing aiming and firing against small targets. I could see that they were being schooled in fire and fire discipline. The motorcycle section was practicing the first lessons in operating a motorcycle. The signal corps troops had completed the installation of their station and were practicing at the transmission of messages.

German Methods Are Followed

In their methods of procedure, the execution of their assignments, and details, the present form of Japanese training was patterned after the German school. The equipment used by the pupils is of the most modern design and well cared for.

The general impression gained from a rapid survey of the training groups was excellent. Their appearance was much less that of cadets that of bona fide soldiers. Their dress, appearance, and discipline gave one the feeling that he was reviewing veteran trained men rather than students of a military academy.

With regard to military preparation in Japan, it should be noted that in this country there is no such thing as recruiting, properly speaking, and training is given:

(1). by pre-military training of youths in the primary and secondary schools directed and controlled by the government and with the patriotic cooperation of the teaching profession which is an auxiliary of great value in the moral and military education of the nation;

(2). by physical education sponsored by the government and by a great national association (all directed by an army general) which encourages physical culture in factories, offices—both governmental and private, colleges, universities, public places of recreation, etc., as a means of improving the physical condition of the people. (It is curious to see the great numbers of people, young and old, men and women, who gather in the great parks at the end of the morning's work to take their lesson in physical culture under the direction of a professor assisted by a public address system!);

(3). by juvenile military organizations similar to the Boy Scouts but directed by officers of the active reserve.

When the first part of my visit was finished, I was invited to examine the supply stores, armories, and other places of this type which occupy an extensive area in the rear of the institution. Generally speaking, the construction follows the same lines as elsewhere: wood superstructure, concrete floors and bases for pillars.

In the armory where the heavy infantry weapons are kept are machine guns, infantry cannon, and mortars in sufficient numbers for two or three basic units. In the artillery armory are many medium and heavy field guns. My attention was attracted by a 75-mm mountain howitzer and a 70-mm anti-aircraft gun. Both of them were perfect weapons and were, I was told, the last word in Japanese construction. Heavy howitzers are also to be seen as well as 150-mm cannon and tanks. There are enough of these weapons to equip several basic units.

Lastly, I saw the technical equipment of the engineers, including a form of dam for use in water operations.

The presence of such complete equipment indicates to what extent the Academy goes into the matter of technical and professional preparation of the young officers. All are free to form their own conclusions, but one thing is certain, the officer joins his troop as a soldier and possessing the knowledge of tactics and the science of his profession.

Next we went to the training grounds which are located close to the school. After about fifteen minutes travel we arrived at an observation post where the whole terrain, which is about two and a half miles long and a mile wide, is visible.

At one end of the area is an obstacle course for horsemanship where twenty-five students distributed over the terrain were practicing different gaits, games, short-pace walking, etc.

In reply to a query, I was told that the infantry and artillery firing practice takes place in this same area. On such occasion, the artillery occupies positions in adjacent areas and on private property, and the tactical situations are planned in such a manner that the projectiles fall inside the limits of the training grounds.

I noticed a little, square fenced area which was in the center of the observation post and other similar ones at various points in the terrain. I was told that they were spots from which the Emperor had witnessed the maneuvers of the school. They are sacred spots which may be occupied only by the Sovereign.

The time was now at hand to take the train back to Tokyo, and I took my leave.

Conclusions

As a result of historical tradition and religion, the Japanese army possesses an institutional spirit which it is impossible for any other nation to surpass. The new German army was able to adopt the new trends and combine them with the sound traditions of imperial glory, which are religiously respected. In this way, even during the most critical periods, the military institution was able to maintain its position of a true state within a state and dedicate itself exclusively to its own preparation and the preparation of the nation for war. Outside the circles which were striving for control, it was able to acquire wonderful organizations, education, and training.

Through what I was told and was able to observe, I have the firm conviction that Japanese military officialdom has no interest in political and social problems. Logically, the high command and staff study both home and foreign policies from the point of view of their affect on plans of war. This official class lives in a purely military atmosphere and never appears in civilian clothing, for it is considered an honor always to be dressed in uniform. Its conversation turns preferably to military topics. It enjoys great prestige and honor, for the nation has faith in its uprightness, patriotism, and trustworthiness.

It should also be noted that there are no dismissals from the service in the Japanese army for crimes or attempted crime involving military dishonor, for under such circumstances, the officer prefers to take his own life (hara-kiri). This was the case with several officers a few years ago who attempted to intervene in matters outside their profession.

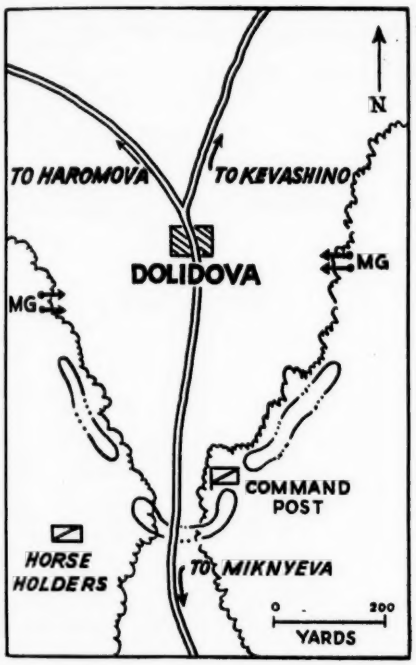
Another characteristic of the Japanese institutional spirit is the spirit of modesty and sacrifice common to all members. Although many of them are of the highest nobility and oldest ancestry, they live as modestly as any other officer. They do not take advantage of their status in the least, which is much in contrast with the pride and aristocratic airs that we have noticed in other countries and all of which constitute negative factors in institutional unity.

According to my observations, the Japanese officer is modest, disinterested in material wealth, sober, and honorable even to the smallest details of life as a consequence of religious mandate.

Soviet Cavalry Tactics.

[From Russian Newspaper Reports]

Following the German reversals during December, 1941, many small Soviet cavalry detachments were operating in the rear of the German lines. One of these detachments, probably a reinforced troop, under command of Lieutenant "K" was acting as the left flank security detachment of a larger Soviet force.



This unit, moving up from the south where the main Soviet force was located, occupied the village of Dolidova in the afternoon. The German withdrawal was expected to pass through the village but the lieutenant had no other information concerning the strength or location of the German forces. He decided to remain in the village for the night and send out reconnaissance patrols.

Local security outposts were first placed on the main avenues of approach to the villages and in addition a system of roving patrols was established connecting the outposts. The lieutenant then dispatched the largest of two patrols on the road to Kevashino under command of Sergeant "H." This patrol had the mission of reconnaissance in the vicinity of Kevashino and to the northwest and of destroying any enemy patrols encountered. The second and smaller patrol moved out on the road to Haromova with the mission of reconnaissance to the north and northeast in the direction of Haromova.

No action occurred during the night but in the morning Lieutenant "K" received a message from Sergeant "H" stating that he had encountered an enemy force near Kevashino consisitng of a troop of cavalry and a few tankettes. The German force was reported moving on the road to Dolidova and about eight kilometers north of Dolidova. Lieutenant "K" estimated that the enemy should arrive at his position in an hour or an hour and a half.

The lieutenant decided to leave the village and take a concealed position in the woods, which were about 300 to 400 meters south of Dolidova, hoping to trap the enemy as he emerged from the village. He distributed his force as shown on the accompanying sketch blocking the road with one platoon. His machine guns were placed on the extreme flanks to secure the maximum flanking fire on the enemy. The individual troopers were also equipped with antitank grenades and the machine guns with armor-piercing ammunition.

At noon Soviet scouts observed four German tankettes and two infantry companies nearing Dolidova on the Kevashino road. This enemy force delivered heavy fire into the town before entering. About ten or fifteen minutes later the German cavalry appeared on the same road with an advance guard of eight troopers. This cavalry marched through the village toward the Soviet position. The infantry and tankettes remained in the village to cover the advance.

Lieutenant "K" allowed the enemy advance guards to enter the forest and held his fire until the head of the main cavalry column reached the woods. At this moment he gave the signal to fire. The Germans were trapped by the platoon covering the road to the south and flanking fire from the woods on either side. After suffering fifty per cent casualties in horses and thirty per cent in men, the Germans left their horses and retreated to Dolidova. Owing to still superior enemy force, the Soviets did not pursue.

The four German tankettes and a company of machine guns advanced on the Soviet position and opened a heavy fire supported by the remaining German cavalry. The Russian forces quickly withdrew to the village of Miknyeva further south. The Germans did not pursue.

Soviet Tank Tactics.

[From Russian Newspaper Reports]

On one of the regions of the Southwestern Front the Germans had fortified a large city and the outskirts with trenches and "dzots" (earth and timber firing points). A "dzot" is occupied by a group of riflemen, machine guns or antitank guns and all have both radio and telephone communications.

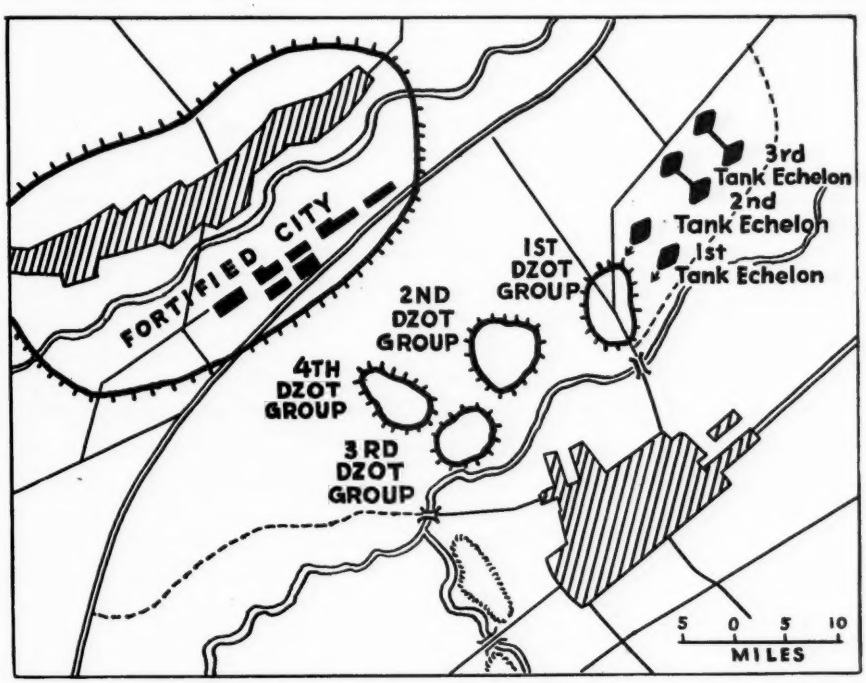
The "dzots" were grouped together in strong points of about a battalion in strength and each "dzot" was constructed for all around defense. The "dzot" groups were located as shown on the accompanying map and numbered about thirty. The section probably took place early in March since the rivers shown on the map were described as impassable due to the thaw.

The German position was extremely important since it occupied one large city and dominated another and was also deep in the flank of a large Soviet shock grouping and convenient for counterattacks.

Soviet reconnaissance groups made several attempts to approach and secure definite information of the German positions but were driven back under heavy mortar and machine gun fire.

The Russians then decided to reduce the German positions piecemeal. The four groups of "dzots" between the two cities were to be reduced first and followed up by the reduction of the fortified city. The task of destroying the "dzots" was given to a tank and infantry force—probably a regiment of each.

A detailed reconnaissance of the German positions was made on foot on the evening before the battle. The infantry practiced their storming tactics on a similar group of "dzots" previously captured. All details and assignments down to the smallest unit were worked out as close to actual conditions as possible. Each infantry storm group consisted of from 12 to 15 men all equipped with hand grenades and assigned a specific role.



The Soviet tank force was organized into three echelons. The first echelon's objective was the first group of "dzots." The second echelon, following at 500 to 600 meters and carrying "desant" infantry on its tanks was to support the advance of the first echelon by fire and then attack the same objective. The third echelon, carrying desant infantry, was to support the advance of the second

echelon and act as general reserve. The remainder of the infantry force, organized in storm groups, was to advance immediately behind the first tank echelon and exploit their success. In addition heavy artillery support fire was provided and shifted to new objectives as the Commander of the combined forces desired.

The attack proceeded as scheduled. The first tank echelon with the aid of support fire silenced the antitank defense of the first "dzot" group and thus enabled the second tank echelon with "desant" troops to approach within 300 yards of the "dzot" group. Each tank as it approached the fortified area halted for 20 to 30 seconds to fire and when sufficiently close to drop its "desant" troops.

Twenty-five to thirty minutes after the start of the attack the first and second tank echelons were 100 to 150 meters from the "dzots" firing directly into the embrasures and the "desant" groups were approaching the top of the "dzots." At the request of the tank commander the artillery fire was shifted to the second "dzot" group which the third tank echelon was already approaching.

While the attack on the second "dzot" group was in progress the storm groups of infantry cleared out the remainder of the first "dzot" group. The second tank echelon and the remainder of the first echelon reorganized and attacked the third "dzot" group.

The above process of reducing one "dzot" group at a time continued until the last group had been captured. The Soviets state that the entire operation took eight hours.

The Soviet use of "desant" and storm groups in cooperation with tank units is of particular interest. The first tank wave which is subjected to the greatest amount of fire does not carry any "desant" groups but has the task of silencing the antitank fire only. The succeeding waves carrying "desant" troops are then able to approach to within 300 yards of the positions, drop the "desant" troops who then proceed on foot and, together with the tanks, complete the reduction of the enemy position.

The majority of Soviet light tanks are constructed similarly to the old American "Christie" tank with a broad turret well forward thus providing ample protection and space on the rear deck for the "desant" groups. These "desant" groups are equipped with rifles or automatic rifles, light machine guns and hand grenades. Each group is assigned a definite task in advance so that the operation will proceed rapidly with greatest economy of personnel.

This method of using a tank—infantry team is used often by both the Germans and the Russians.

Direct Fire by Artillery.

[From Russian Newspaper Reports]

The Soviet artillery has developed a very effective technique in destroying visible firing points of the enemy. All enemy firing points are thoroughly reconnoitered, plotted and their positions made known to all artillery and infantry commanders during daylight hours. Under cover of darkness large numbers of guns, for example 15 to 20 guns for each 70 targets, are placed in readiness on the support or main line of resistance for direct fire. All preparations of positions and their approaches are conducted at night. Pieces are moved forward to defiladed positions in rear of firing positions and camouflaged. They remain inactive and motionless during the following day. Strict camouflage discipline is vital to the success of this operation. Just prior to dusk at the zero hour all guns are rolled out quickly by hand from their defiladed positions into their open firing positions and the cannonade on the predetermined targets is begun.

Targets are fired on in the following priority: first, observation points; second, machine guns and antitank guns; and third, dugouts. Other targets are attacked simultaneously by infantry with rifle, machine gun and mortar fire. So-called "sentinel" guns are held in readiness during the attack to take under fire theretofore undiscovered targets and must be able to fire on areas which the other pieces cannot reach.

In the event that tanks appear in a counterattack, all pieces shift their fire to the oncoming tanks.

As night falls and visibility ceases the artillery withdraws by echelon to their normal positions.

The Locators

Under the auspices of the Women's Activities Group at Fort Leavenworth, Kansas, a file to compile and furnish information about the addresses of Army officers' wives has been established. Mrs. C. R. Bathurst is in charge.

The service is without charge, but anyone requesting information about any officer's wife should use a self-addressed penny postal and place on the reverse side the name of the lady whose whereabouts is sought, together with her first name and her husband's name and rank.

Co-operation of officers' wives is sought so that the files may be kept up-to-the-minute. Please send your name and address as you wish it to appear in the records, and also the rank and name of your husband as given in the Army Directory.

Addresses are furnished upon individual request only, and no lists are available for solicitation or publication.

The Locators' address is P.O. Box 537, Fort Leavenworth, Kansas.

This is not an advertisement.—Editor.

Library Bulletin

BOOKS ADDED TO THE LIBRARY SINCE MARCH 1942

AMERICAN ACADEMY OF POLITICAL & SOCIAL SCIENCE — **America and Japan.** A survey of current relations between the United States and Japan, with their background and implications.

AMERICAN ACADEMY OF POLITICAL & SOCIAL SCIENCE — **Billions for Defense.** How can the American people pay the costs of rearmament?

AMERICAN ACADEMY OF POLITICAL & SOCIAL SCIENCE — **Crime in the United States.** An attempt to understand the basic patterns of causation underlying criminal conduct.

AMERICAN ACADEMY OF POLITICAL & SOCIAL SCIENCE — **Defending America's future.** Showing the internal and external problems involved in the present international situation.

AMERICAN ACADEMY OF POLITICAL & SOCIAL SCIENCE — **Public policy in a world at War.** The fundamental elements of domestic and foreign policy, and the relationship of the United States to the present war and prospective peace.

AMERICAN ASSOCIATION FOR SOCIAL SECURITY — **Can we stop a post-war depression now?**

AMERICAN COUNCIL ON SOVIET RELATIONS — **The Slavic peoples against Hitler.**

American economic mobilization: A study in the mechanism of war.

ARNOLD, LT.GEN. H.H., AND EAKER, BRIG.GEN. IRA C. — **Army flyer.**

ARTUCIO, HUGO FERNENDEZ — **The Nazi underground in South America.**

BARRES, PHILIPPE — **Charles de Gaulle.**

The Battle of Britain. — An Air Ministry Record of the Great Days from August 8th to October 31st. The First Great Air Battle in History.

Battle of Giants. Eye-witnesses' stories from the Russian front.

BINNS, ARCHIE — **The roaring land.**

BYWATER, HECTOR C. — **The Great Pacific War.**

CANT, GILBERT. — **The War at Sea.**

CONGRESS — **Army Pay Tables**

COURT OF CLAIMS — **Cases decided in the Court of Claims of the United States June 2, 1941, to November 30, 1941.**

Current Biography. Who's who and why, 1941.

DE ROUSEY DE SALES, RAOUL — **The Making of Tomorrow**

DE SEVERSKY, MAJOR ALEXANDER P. — **Victory through Air Power**

DOCK, M. RUSSELL — **Our third line of defense.**

DUPUY, COLONEL R. ERNEST, AND CARTER, LIEUT. HODDING — **Civilian defense of the United States.**

EDDY, SHERWOOD — **Maker of Men.** The secret of character building.

FARAGO, LADISLAS — **Axis Grand Strategy**

Federal Reporter. Vol. 123 F. 2d

Federal Reporter, Second Series, Vol. 124 F. 2d

FLORY, DR. WILLIAM E.S. — **Prisoners of war.**

FODOR, EUGENE — **1938 in Europe.** The entertaining travel annual.

FRANCE, ECOLE SUPÉRIEURE DE GUERRE — **Course in artillery tactics.** Translation from the French by Major John J. Burns.

GARSIA, LT. COL. CLIVE — **Planning the war**

GREAT BRITAIN. WAR OFFICE — **Wartime building construction.** 1st American edition, 1941.

HARTMAN, DENNIS — **Aviation Law Digest.** Including the decisions of all Federal and State Courts.

HARTNEY, LT. COL. HAROLD E. — **What the citizen should know about the air forces**

HAY, IAN — **The Battle of Flanders, 1940**

HAZARD, FREDERICK R. — **Aircraft identification.**

HOOVER, HERBERT — **America's first crusade.**

KEESING, FELIX M. — **The South Seas in the modern world**

KERNAN, LT.COL. W.F. — **Defense will not win the war**

KIRALFY A. — **Victory in the Pacific**

KRULL, REV. VIGILIUS H. — **Christian Denomination**

LASKI, HAROLD J. — **The strategy of freedom.** An open letter to American youth.

MALEVSKY-MALEVITCH, P. — **The Soviet Union today.** Being a Supplement to **Russia — U.S.S.R.** and containing a complete index to both volumes.

MITCHELL, KATE — **Japan's industrial strength.**

MITCHELL, MARGARET — **Gone with the Wind**

MORISON, SAMUEL ELITO — **Admiral of the ocean sea.** A life of Christopher Columbus.

NATIONAL FIRE PROTECTION ASSOCIATION — **Employee organization for fire safety.**

NATIONAL FIRE PROTECTIVE ASSOCIATION — **Fire defense**

NEUMANN, FRANZ — BEHEMOTH — **The structure and practice of national socialism**

New International Year Book. A Compendium of the World's Progress for the Year, 1941.

The Officer's Guide (8th Edition)

OTT, LESTER — **Aircraft spotter.** Aircraft identification for Army, Navy and civilians.

PEMBERTON, J.C. — **Defender of Vicksburg**

PORTER, CATHERINE — **Crisis in the Philippines**

PRATT, FLETCHER — **What the Citizen should know about modern war**

RAWLINGS, MARJORIE KINNAN — **Cross Creek**

The Red Army and Navy

SARGEAUNT, H.A., & WEST, GEOFFREY — **Grand strategy**

SCHUPERT, PAUL — **Sea power in conflict**

SCHUMAN, FREDERICK L. — **Design for power**

SFORZA, COUNT GARLO — **Fifty years of war and diplomacy in the Balkans**

STEINBECK, JOHN — **The moon is down**

The Sixth Column

TARLE, EUGENE — **Napoleon's invasion of Russia, 1812**

THOMPSON, LT.COL. PAUL W. — **What the Citizen should know about the Army Engineers**

TIMPERLY, H.J. — **Japan**

TOLSTOY, LEO — **War and Peace**

United States Code. Vol. IV: Tables and Index

WAR DEPARTMENT — **Annual report of the Chief of Engineers, U.S. Army (Part 2), 3 Vols.**

WAR DEPARTMENT — **Digest of opinions of the Judge Advocate General of the Army 1912 – 1940**

WAR DEPARTMENT — **Report of the Secretary of War to the President, 1941**

WAR DEPARTMENT — **Uniforms of the German Army and Luftwaffe**

WEBB, ADDISON — **Air raid protection, what to do, how to do it**

WHITE, E.B. AND KATHARINE S. — **A subtreasury of American humor**

ZACHROFF, LUCIAN — **The Voice of fighting Russia**

BOOK REVIEWS

VICTORY IN THE PACIFIC

By Alexander Kiralfy

283 Pages . . . . The John Day Company, New York, N.Y.

The author has had an especially good education, particularly in naval and other military affairs. He studied in a French academy in Brussels, Belgium, and at Cambridge University in England. In addition to his other academic studies, he has made a speciality of tactics, ordnance, and shipbuilding.

The book gives an answer to such questions as:

Why is Vladivostok the key to victory?
Can Japan withstand attack as well as she wields it?
Is the Pacific a secondary front or a second primary front?
What hope is there of recapturing lost Pacific areas?

A considerable part of the book is in argumentative style. The arguments are backed by a thorough exposition of facts, including an examination in detail of the geographic positions, the military and naval establishments, and the strategic problems of all the Allies. Mr. Kiralfy contends that we must not wait for completion of a two-ocean navy or an aircraft production of 50,000 planes a year, but that we must strike now.

WHAT THE CITIZEN SHOULD KNOW ABOUT THE AIR FORCES

By Lt. Col. Harold E. Hartney

226 Pages . . . . W. W. Norton and Company, Inc., New York, N.Y.

"What the Citizen Should Know About the Air Forces" is presented in a simple style. It includes discussions on training of personnel, organization of the air forces, the various types of airplanes, aerial engineering, parachutes, photography, radio equipment, procurement, gunnery, bombing, navigation, research, bases and their construction, aircraft carriers, gliders, the Civil Aeronautics Administration, and air warfare.

The author has been associated with American military aviation ever since he was Commander of the First Pursuit Group of the United States Air Service in World War I. In this book he has made an up-to-date survey of the United States Air Forces.

WHAT THE CITIZEN SHOULD KNOW ABOUT MODERN WAR

By Fletcher Pratt

184 Pages . . . . . W. W. Norton and Company, Inc., New York.

The author has written various books including "America and Total War," "Sea Power and Today's War," "The Navy." He is a military critic of "The New York Post" and military adviser for "Time."

His book, "What the Citizen Should Know About Modern War" defines and explains terms, phrases, and methods of modern war in a clear cut manner. Familiarity with the contents of this book should be helpful to the reader of war news.

THE AXIS GRAND STRATEGY

(By Many Authors)

614 Pages . . . . Farrar and Rinehart, Inc., New York, N.Y.

Selections on military subjects from the writings of some 95 authors, mostly German, have been supplemented by some commentaries and grouped according to subject matter under five parts: (1) The Pattern of Modern War, (2) The Art of War, (3) The War Machine, (4) The Sinews of Total War, (5) Hitler's Grand Strategy.

The grand strategy, as related, is not limited to military ends alone; political and economic weapons, fifth column penetration and "geopolitical" strategy are included.

PEMBERTON, DEFENDER OF VICKSBURG

By John C. Pemberton

350 Pages . . . The University of North Carolina Press

This book was written by the grandson of General John C. Pemberton, Civil War Defender of Vicksburg. The grandson served as a 1st Lieutenant in France during World War I. He is a lawyer and author of certain legal articles.

The author shows why his Northern born grandfather sincerely espoused the Southern cause, chose the Southern side, and made the best of his lot. The book attempts at a vindication, not an apology, for General Pemberton's successes and reverses. What might prove a valuable study for officers is General Pemberton's experience in directing battles under very unfavorable and discouraging circumstances. He was confronted with such obstacles as superior numbers, long lines of communication, unanswered calls for reinforcements, an unsympathetic Southern populace, and orders to accomplish the nigh impossible. The great personal tragedy portrayed in the book is that General Pemberton, after withstanding for 47 days close investment by an army at least four times as great as his own and enduring constant bombardment from the Navy, was accused by the South of being a traitor.

DEFENSE WILL NOT WIN THE WAR

By Lt. Col. W. F. Kernan, *Field Artillery*

193 Pages . . . Little, Brown & Company, Boston

This book is outstanding in the following respects: (1) it gives one opinion on how the consequences of a policy of military defense without offense has been catastrophic for the democracies; (2) it gives an explanation of why we in America must utilize our "fifth freedom," the freedom to fight, in order to end the threat to the other freedoms; (3) it emphasizes the colossal waste of lives and property caused by political bickering and operations, often unscrupulous, characteristic of European democracies—a weakness of democracies in general that must be "corrected by courage"; (4) it boldly declares that the United States should invade Italy now, and lucidly supports the assertion with compelling arguments.

The author received a M.A. degree from Harvard University in 1916 and was an instructor in Medieval Philosophy there. In August 1917 he was commissioned second lieutenant in the field artillery of the regular army and has served therein continuously.

THE SIXTH COLUMN

By Winston Churchill, Jan Masaryk, Mme. Antonina Paderewska-Wilkonska, Stanislaw Stronski, Karin Michaelis, Tor Myklebost, Theodore Broch; Dr. N. A. C. Slotemaker de Bruine, Henri Fast, Prince Jean of Luxembourg and Pierre Dupong, Genevieve Tabouis, Dr. Svetislav-Sveta Petrovitch, Sofocles Venizelos.

313 Pages . . . Alliance Book Corporation, 212 Fifth Ave., New York

This book consists of a collection of articles and letters, reputed to be authentic, describing Nazi oppression in the various occupied countries. Many of the acts of oppression described are gruesome, cruel, and inhuman.

The Sixth Column is "the front behind the front," and is said to contain millions of people who are willingly and unwillingly opposing the oppressor in the occupied regions. Sometimes they may battle against the traitor in their own country.

Especially astounding is the story of how Denmark, having shown the Germans every consideration, suffered in return hideous and ruthless loss of the necessities of life under the astonishingly unjust Nazi regime.

THE VOICE OF FIGHTING RUSSIA

By Lucien Zacharoff

336 Pages . . . Alliance Book Corporation, New York, N.Y.

This book includes a few of the "key" speeches of Joseph Stalin. One was made 3 July 1941 explaining the task Russia had of destroying the Nazi enemy and the encouraging facts existent at that time. Stalin made two speeches on 6 -7 November 1941 announcing the status of the war, inspiring confidence and again stating the encouraging signs.

The greater part of the book is devoted to accounts of numerous battles at the front, especially local engagements and exploits of personal courage told by Russian soldiers.

There is a very appropriate, inspiring, and beautifully written chapter on "What We Are Defending" written by the literary man, Alexei Tolstoy.

THE NAZI UNDERGROUND IN SOUTH AMERICA

By Hugo Fernandez Artucio

331 Pages . . . . Farrar and Rinehart, Inc., New York, N.Y.

The Nazis, according to the author, have established and are operating a well organized, highly efficient socialistic unit with thousands of members in South America. Agen-

cies of the Nazis are said to have permeated nearly all spheres of South American life. However, Mr. Artucio states that under his leadership Nazi operations have been exposed and subversive activities uprooted.

The author describes in detail what the Nazis have done, how they have operated, and to what extent their efforts have been thwarted. The information given would seem to be valuable for citizens of the United States as well as for those of other nations of the Western Hemisphere.

VICTORY THROUGH AIR POWER

BY MAJOR ALEXANDER P. DE SEVERSKY

354 Pages . . . . Simon and Schuster New York, N.Y.

The author has described and explained our progress in aviation, including the mistakes which have and are now hindering our progress. He compares our best bombers and fighters planes with those of England and Germany and urges that we make improvements not only to equal the types of planes now used by foreign powers, but also to surpass them in quality as well as in quantity. He insists that we build planes which can be flown to their objectives in preference to the plan of shipping the planes to the scenes of battle. He presents a "challenge to America" to win "Victory Through Air Power".

The author has had extensive experience in flying, in aeronautical engineering, and in manufacturing airplanes. He holds numerous world speed records, and in December 1940 he was presented the coveted Harmon Trophy by President Roosevelt for his outstanding achievements in the field of aviation.

MOSCOW WAR DIARY

BY ALEXANDER WERTH

297 Pages . . . . . Alfred A. Knopf, New York, N.Y.

This diary is a vivid narrative covering Russian personalities and Russian activities in the present war. The author vehemently condemns persons and things he does not like, but expresses abundant sympathy and appreciation of the things and people that he admires. His writing is particularly masterful in his description of his trip to the front. The diary includes some commentaries on modern Russian foreign policy, especially Stalin's dealings with Germany since 1938.

THE OFFICER'S GUIDE

479 Pages . . . The Military Service Publishing Co., Harrisburg, Pa.

This volume is intended to serve as "a helpful source for informative study and inspiring counsel" for commissioned officers of the Army of the United States. The inexperienced officer, especially, is offered excellent advice helpful for him in making his adjustment to military life and work.

Some of the subjects covered are: (1) the army educational system, (2) uniforms and equipment, (3) assumption of command, (4) exercise of command, (5) mess management, (6) supply, (7) military courtesy, (8) pay and allowances, (9) efficiency reports, (10) discipline and leadership.

Conclusions of extensively experienced officers are made available for the guidance of others.

ARMY FLIER

BY LT. GEN. H. H. ARNOLD AND BRIG. GEN. IRA C. EAKER, *both of the U. S. Army Air Forces.*

299 Pages . . . Harper and Brothers, New York

"Army Flier" was written especially for the young officers now being trained for our Army Air Forces, although the role of the mature officers of all grades occupying positions of various degrees of responsibility is not overlooked. The style is simple; and numerous narrations, illustrative of the principles laid down, add interest to the context.

The book is one from which an inexperienced officer of any branch of the service can learn. It covers the problems he will run into—not only professional and technical problems, but also those relating to his personal and social life. It gives an officer a view of what awaits him in air combat.

WHAT THE CITIZEN SHOULD KNOW ABOUT THE ARMY ENGINEERS

BY LT. COL. PAUL W. THOMPSON

210 Pages . . . W. W. Norton and Company, Inc., New York, N.Y.

This is one of several recently published books that explains to the citizens in a general way what the work of one or more branches of the Military Service is while in training and in action. The author tells how the Corps of Engineers repairs roads and bridges or makes new roads and temporary bridges. The Engineers the reader is told, keep open the routes of communition, design and build fortifications, provide the artillery with maps, operate the railroads and other utilities, help with camouflage, construct works for the improvement of our rivers and harbors, blast away obstacles which tanks and trucks unassisted would fine insurmountable, and maintain air fields.

PRISONERS OF WAR

BY WILLIAM E. S. FLORY

179 Pages . . American Council on Public Affairs, Washington, D. C.

This book traces the history of international agreements concerning the care and treatment of prisoners of war from ancient to modern times. It indicates how the exchange of prisoners of war between opposing belligerents became customary. Abusive treatment has been generally condemned during the past one hundred fifty years. The book appears to be chiefly an exposition that requires some study in order to learn how practices with regard to the care of prisoners have been established.

THE PANAMA CANAL IN PEACE AND WAR

BY NORMAN J. PADELFORD

The MacMillan Company, New York.

Considerations leading up to the construction of an artifical water-way across the Isthmus of Panama are comprehensively reviewed. The earliest reported considerations of such a project were made by Ceron in 1529. The interest of the United States in the venture sprang from The Mexican War, and the ultimate result was that the first transit in the completed canal occurred in August 1914.

The relations of the United States with the Central American countries concerning the Panama Canal and also proposed routes across the isthmus are outlined.

The book was completed on November 18, 1941 and accordingly does not concern itself with the steps taken by this country since our entry into the war.

FLIGHT IN WINTER

BY JOHN CLINTON ADAMS

Princeton University Press, New Jersey.

This is a story of the Serbian retreat of 1915 in which extraordinary courage, optimism, and endurance were exhibited. The agony, hunger, nakedness, cold, and toil, which the author says were suffered by the Serbians, parallels other unusual incidents of history. It presents satisfactory evidence that men of the twentieth century are still able to do battle with the elements as well as with men.

WHAT THE CITIZEN SHOULD KNOW ABOUT CIVILIAN DEFENSE.

BY WALTER D. BINGER AND HILTON H. BAILEY

175 Pages . . . . W. W. Norton & Company, Inc., New York.

"Modern warfare, above all else, is *total.*" This is the first sentence of, and the reason for, this book on the problems of civilian defense and how to meet them. The book is clearly written and contains basic and practical information. Among the subjects discussed are: the types of bombs and their effects; protection against bombs; the experience of the English in the Battle of Britain; the organization of civilian defense and the duties and functions of members of its several branches. One chapter is devoted to germ warfare.

Although this work is written primarily for civilians, it will be of interest to military personnel also. The authors are qualified specialists in this field. Walter D. Binger served with the A. E. F. in 1918 and is Chairman of the National Technological Civil Protection Committee appointed by the Secretary of War, in which capacity he recently was sent to England. Mr. Bailey, co-author, who also served in the last war, is a special writer on matters of civilian defense for *The New York Times.*

Directory of Periodicals

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THE AEROPLANE (Great Britain)

16 January 1942

IN DEFENSE OF AIR BASES

27 February 1942

FOR THE SUPPRESSION OF MISCHIEFS

THE STIRLING

6 March 1942

ITALIAN LOSSES

The losses of the Regia Aeronautica were illustrated significantly by a recent statement of the Italian Air Ministry. The Italian torpedo formation which took part in the attack on a British convoy on 27 September 1941, was given the name "Lo Stormo del Sacrificio" (Sacrifice Wing) because of the great losses it had suffered during the attack. Thirty-four airmen, including the commanding officer and three squadron leaders, were killed in the action. This wing had already suffered severe setbacks. During the first five months after Italy's entry into the War, the unit had lost 37 per cent of its operational strength, amounting to 12 aeroplanes. This figure includes those machines which were shot down by the enemy, but not those which were lost on the way home, or were destroyed while landing or on the ground. The unit was equipped with torpedo-carrying aeroplanes only a few months before the engagement with the British fleet.

SUPPLIES FROM FRANCE

In July and August, 1941, France exported to Germany 257,000 tons of natural rubber which she had imported from overseas, probably from Madagascar. This quantity by itself may not seem great, but compared with the quantities the United States imported in 1941, the value of French exports becomes evident. During the first nine months of 1941, the United States imported 767,000 tons of rubber. These imports disprove the Nazi claim to have become independent of imported raw materials, particularly of rubber, by the invention of the synthetic Buna. The production of Buna began in 1934 with an annual output of 10 tons, and increased to 4,000 tons in 1937. Since then, several new works have started production, and the present yearly output can be estimated at about 80,000 tons. This quantity is still insufficient to meet all Germany's needs. The North African and Russian campaigns have made heavy calls upon the stocks accumulated during the first year of the war.

Other raw materials which Germany obtained from Vichy-France during July and August last year were 970,000 tons of iron, 111,000 tons of goods manufactured of iron, 5,400 tons of aluminum, and 51,000 tons of bauxite. The aluminum imports, though small, represent about one-fourth of Germany's monthly output, and hints that even Germany's aluminum industry is unequal to the calls upon it.

Aero-motors for the Luftwaffe will be made by the Société Gènèral de Mechanique et d'Aviation, Paris, a new Company formed jointly by the Bank for German Aviation, and the Breguet Aero-motor Works, with a capital of 15 million francs.

UNDERGROUND AIRCRAFT FACTORIES

Several underground war factories are now in production in Great Britain. Others are being made ready. By the courtesy of the Ministry of Aircraft Production and two famous engineering companies we were recently allowed to see a well-worked quarry being converted into an aircraft factory, and the next day, to visit another quarry that had already been transformed and was in production.

An elaborate ventilation has been installed. Three wide shafts have been sunk down which air, warmed or cooled according to the season, will be forced by fans. Four more, arranged around the edge of the hidden factory site, will take away air no longer fit for lungs to breathe. One of the intake shafts falls away into the earth in a sweeping curve — a safeguard against bombing. The rest are vertical and as straight as gun barrels. To keep out the bombs they are capped with concrete slabs several feet thick. The ventilation will also defeat the ravages of rust set up by condensation.

Walls and roofs shaped by sharp-edged cutting tools have been painted yellow.

Four elevators and two escalators will transport the workers between the surface and the factory. A shaft of exceptional girth surmounted by a powerful hoist, provides access for the bigger machine tools and a way out for the heavier and bulkier items.

Lighting throughout is by fluorescent tubes.

Modern engineering insures that the workmen shall not be deprived of their normal amenities because they work underground. Provision has been made for a canteen, and each section has its own lavatories. Waste is disposed of by a sewage ejector with an elevator of more than 100 feet.

All the machine tools are placed along the walls in such a manner that there is the widest possible gangway between the double rows. For the most part, the factory is on a single story plan, but at certain points deeper excavations made possible "double-decker" building. Several groups of lavatories and offices are one above the other, and one of the stores has an upstairs department.

Most of the machine tools are of the kind found in large engineering shops — lathes, drills, shapers, grinders, routers — but when extentions still in progress are finished some of the more valuable tools from surface aircraft factories will be brought in to safeguard them from damage by air raids. So far as possible the heavier machine tools will be given quarters of their own.

The air conditioning system has proved entirely satisfactory. The same air is circulated, cleaned and recirculated for six hours and is then completely changed, but tests showed that the air remained good for three days without changing. Steam pipes in the air intake can be used to heat the air if necessary, but even on the bitterest days of the winter the steam heater was not needed.

A careful watch is kept on humidity, and an instrument resembling a barograph records the state of the air throughout the 24 hours of every day. Any tendency to excessive humidity in the factory is promptly checked by the engineer in charge of the air-conditioning plant. The temperature is kept at between 60 and 65 degrees Fahrenheit.

A first-aid room, complete with qualified nurse, has also been provided.

Perhaps the best use of available space was made in the design and layout of the control room. This was built in an old seepage pit which gave an exceptionally good building height. The control room has a high ceiling, so that big charts and indicators could be erected on three of its walls. Large glass panels make up the fourth wall. From the upper half the director can look directly down on the charts and indicators from his office, and from the lower the progress and planning departments can keep close check on the state of production in every section of the works.

A visitor to the factory was impressed by the apparent efficiency of the system. The control room is linked to every department in the works by telephone, loud-speaker and microphone. At set intervals, reports are telephoned to control and as the information is transmitted the records are altered accordingly. Thus, executives have only to examine the charts and indicators to discover how production compares with schedules at any given moment.

Although the factory was comparatively new, it had been working long enough, to prove that, given the right conditions, underground war production was practical even for the making of delicate aircraft parts. No trouble had been encountered with condensation, the machine tools worked as well as in any surface factory, and none of the men or women on day or night shift appeared to have suffered in health.

If Britain's use of underground premises for war production is "prudence born of experience" rather than of foresight it is at least a step in the right direction.

13 March 1942

GUERRILLA FIGHTING BY AIR

THE FUTURE OF BOMBING

WAR-TIME TRANSPORT IN EUROPE

AIR FORCES NEWS LETTER

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HUNTING FOR TIN FISH. AN ARMY BOMBER ON SUBMARINE PATROL. Captain Lynn Farnol

PHYSICAL TRAINING IN THE ARMY AIR FORCES. KEEPING THEM FIT FOR FLYING. Major General W.R. Weaver

TORPEDOES SPROUT WINGS. AVIATION'S UNDERSEA WEAPON. Lieutenant F.J. Novitski

AIR SERVICE COMMAND SUPPLIES THE WORLD. ACTION BEHIND THE COMBAT SCENES. Major General Henry J.F. Miller

THEY CATCH 'EM WITH THEIR FLAPS DOWN. "INTRUDER TACTICS" BAG NAZI BOMBERS

MAKING AMERICA'S SKY WARRIORS. THE FLYING TRAINING COMMAND. Major General Barton K. Yount

THE AUSTRALIAN FRONT. PANORAMA VIEW OF A NEW BATTLEFIELD. Oliver Townsend

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REFLECTIONS OF A BOMBER PILOT. NIGHT BOMBING OVER WESTERN EUROPE. Flight Lieutenant G.L. Chesire, RAF

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GLIDERS PLAY IMPORTANT ROLE IN AAF WAR PLANS. MOTORLESS ATTACK AND TRANSPORT. Lewin B. Barringer

MAN IN THE STRATOSPHERE. THE HUMAN ANGLE AT 40,000 FEET. Colonel David N.W. Grant

WAR IS CLIMBING. WHAT'S GOING ON "UPSTAIRS." Captain Nathaniel F. Silsbee

PERFORMANCE AT NEW HEIGHTS. COLD CHAMBER TESTING AT WRIGHT FIELD

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PLANS FOR A MEDICAL HISTORY OF THE EMERGENCY. Colonel Albert G. Love, U.S. Army, Retired

INFLUENZA. — CIRCULAR LETTER NO. 124, OFFICE OF THE SURGEON GENERAL, U.S. ARMY, DECEMBER 23, 1941

BLOOD AND PLASMA TRANSFUSIONS IN THE ARMED SERVICES. Captain Douglas B. Kendrick, Jr., U.S. Army, and Lt. Commander L.R. Newhouser, U.S. Navy

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VENEREAL DISEASE CONTROL OFFICERS. LETTER, A.G.O., FEBRUARY 6, 1942

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SUPERTANKS. DEVELOPMENTS LEADING TO THE NEW HEAVY WEAPON. Brigadier General G.M. Barnes

CHEMISTRY IN WARFARE. RESEARCH AND DEVELOPMENT — KEYS TO VICTORY. Colonel Maurice E. Barker

CHEMICAL DEFENSE. CHARACTERISTICS OF THE PRINCIPAL MILITARY WEAPONS. Lieut. Colonel Alden W. Waitt

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THE NEW COMBAT HELMET. DEVELOPMENT OF A SUPERIOR HEAD ARMOR FOR THE U.S. SOLDIER. Colonel René R. Studler

OFFICER TRAINING. SELECTIVE PROCESSING IN THE MASS PRODUCTION OF ORDNANCE LEADERS. Colonel George W. Outland

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ORDNANCE IN THE FIELD. MAINTENANCE AND SUPPLY IN THE IV ARMY CORPS DURING MANEUVERS. Lieut.Colonel L. Monroe Bricker

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THE SECOND GERMAN WAR (SEPTEMBER-NOVEMBER, 1941). Lieut.Colonel H. de Watteville

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[Artilleria de Costa.] Captain Salvador Bravo de la Torre

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[El Servicio de Sanidad Divisionario Durante el Movimiento.] Major Salvador Hernandez Vela

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[Defensa contra Aeronaves.] Colonel Enrique Flores

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[La Agresión Quimica.] Lieut.Colonel Angel Ripoll

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LIST OF PERIODICALS INDEXED AND KEY TO ABBREVIATIONS

Aero = Aeroplane (Great Britain)

AF News Let = Air Forces News Letter

A Med Bul = Army Medical Bulletin

A Ord = Army Ordnance

A Quar = Army Quarterly (Great Britain)

A Vet Bul = Army Veterinary Bulletin

Cav Jour = Cavalry Journal

Chem War = Chemical Warfare Bulletin

CA Jour = Coast Artillery Journal

An Cos = An Cosantóir (Ireland)

Defensa = Defensa (Mexico)

Def Nac = A Defesa Nacional (Brazil)

FA Jour = Field Artillery Journal

Ftg Forc = Fighting Forces (Great Britain)

Inf Jour = Infantry Journal

Jour RAMC = Journal of the Royal Army Medical Corps (Great Britain)

Jour R Art = Journal of the Royal Artillery (Great Britain)

Jour RUSI = Journal of the Royal United Service Institution (Great Britain)

Jour USII = Journal of the United Service Institution of India (Great Britain — India)

MC Gaz = Marine Corps Gazette

Mil Eng = Military Engineer

Mil Surg = Military Surgeon

Nav Inst Proc = Naval Institute Proceedings

QM Rev = Quartermaster Review

Res Off = Reserve Officer

Rev Mil = Revista Militar (Argentina)

RAF Quar = Royal Air Force Quarterly (Great Britain)

Roy Eng Jour = Royal Engineers Journal (Great Britain)

Tank = The Tank (Great Britain)

GENERAL

A Jour Int Law = American Journal of International Law

Amer Mer = American Mercury

Asia = Asia

Atlantic = Atlantic

Collier's = Collier's

Country Life = Country Life

For Aff = Foreign Affairs

Fortune = Fortune

Geog Rev = Geographical Review

Harper's = Harper's Magazine

Horse = The Horse

Jour Mod Hist = Journal of Modern History

Life = Life

New Rep = New Republic

NY Times Mag = New York Times Magazine

Nat Geog = National Geographic Magazine

Proc A Pol Sci = Proceedings of the Academy of Political Science

Round Table = Round Table (Great Britain)

Times [London] = The Times (London) Weekly Edition

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Air power in war. (Jour R Art — Jan 1942)
The ground defence of aerodromes. (Jour R Art — Apr 1942)
An aerial blitzkrieg in miniature. (MC Gaz — Mar 1942)
The air war of 1941. (RAF Quar — Mar 1942)
A review of the battle of Habbaniya, May, 1941. (RAF Quar — Mar 1942)
Animals and bombs. (RAF Quar — Mar 1942)
The epic of Malta. (Tank — May 1942)
Notes on aerial tactics. (Def Nac — Feb 1942)
Bombs away! (Collier's — 9 May 1942)
One way to cripple Japan. (Harper's — Jun 1942)
The R.A.F. in Libya. (Times [London] — 8 Apr 1942)
Barrage balloons. [See page 28]

AMMUNITION

Artillery fuzes. (A Ord — May-Jun 1942)

ANIMALS

Animals and bombs. (RAF Quar — Mar 1942)
The horse goes back to war. (Vet Bul — Apr 1942)

ANTIAIRCRAFT ARTILLERY

Defense against low flying aircraft. (CA Jour — Mar-Apr 1942)
The horizontal fire problem. (CA Jour — Mar-Apr 1942)
Identification of aircraft. (CA Jour — Mar-Apr 1942)
Solution of the problem of antiaircraft fire. (Def Nac — Mar 1942)

ANTIAIRCRAFT DEFENSE

In defense of air bases. (Aero — 16 Jan 1942)
Defense against low-flying aircraft. (CA Jour — Mar-Apr 1942)
Antiaircraft defense. (Defensa — Apr 1942)
Shoot the 'chuters. (Inf Jour — May 1942)
The ground defence of aerodromes. (Jour R Art — Apr 1942)
Barrage balloons. [See page 28]

ANTIGAS

Chemistry in warfare. (A Ord — Mar-Apr 1942)

ANTITANK

Japanese mechanization. (Cav Jour — Mar-Apr 1942)
"Blitzkrieg." (Jour RAMC — Mar 1942)
Miniature range for anti-mechanized training. (MC Gaz — Mar 1942)
New warfare in Libyan Desert. (Times [London] — 8 Apr 1942)
Antitank gun versus tank. [See "Foreign Military Digests" Section]

ARCTIC, The

Arctic lifeline. (An Cos — Apr 1942)
An Arctic route to Siberia. (New Rep — 18 May 1942)

ARMAMENT

German re-armament (1919-1939). (Jour R Art — Apr 1942)

ARMORED FORCES

Mobile surgical unit, First Armored Division. (Cav Jour — Mar-Apr 1942)
Get-a-way screen for scout cars. (Chem War Bul — Apr 1942)
A rifle platoon stalks five night-bound tanks. (Inf Jour — Apr 1942)
The operations in the Southern Desert, Iraq, 1927-28. (Jour USII — Oct 1941)
Future naval forces. (Nav Inst Proc — May 1942)
Epic of an encircled Russian unit. [See "Foreign Military Digests" Section]
Mountain warfare. [See page 57]

ART OF WAR STRATEGY
Interior versus exterior lines. (Ftg Forc — Apr 1942)
Co-operation or co-ordination. (Ftg Forc — Apr 1942)
Torpedoes sprout wings. (AF News Let — Mar-Apr 1942)
The "Tankenstein" monster. (A Quar — Jan 1942)
Some lessons on war (General Hawkins' Notes). (Cav Jour — Mar-Apr 1942)
Chemistry in warfare. (Chem War Bul — Apr 1942)
Get-a-way screen for scout cars. (Chem War Bul — Apr 1942)
Naval gunfire support of landing troops. (FA Jour — Apr 1942)
The invarient principles. (Inf Jour — Apr 1942)
Guerrilla warfare. (Inf Jour — Apr 1942)
Jungle warfare. (Inf Jour — Apr, May 1942)
"Blitzkrieg." (Jour RAMC — Mar 1942)
Air power in war. (Jour R Art — Jan 1942)
Some aspects of forest warfare. (Jour USII — Oct 1941)
An aerial blitzkrieg in miniature. (MC Gaz — Mar 1942)
The politico-military strategy of the Nazis. (Mil Eng — May 1942)
How shall we win? (Nav Inst Proc — Apr 1942)
Victory: In war and peace. (Nav Inst Proc — Apr 1942)
The wings of sea power. (Nav Inst Proc — Apr 1942)
The new method of warfare. (Nav Inst Proc — Apr 1942)
Future naval forces. (Nav Inst Proc — May 1942)
Pursuit. (Rev Mil — Jan 1942)
Australia, keystone of Far Eastern strategy. (For Aff — Apr 1942)
How Japan wages war. (Life — 11 May 1942)
Commandos — modern suicide troops. (NY Times Mag — 5 Apr 1942)
The strategy of the war. (Round Table — Mar 1942)
Barrage balloons. [See page 28]
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The psychology of troops in defense. [See "Foreign Military Digests" Section]
Epic of an encircled Russian unit. [See "Foreign Military Digests" Section]
Some notes on German tactics and training. [See "Foreign Military Digests" Section]
Night attack in the mountains. [See "Foreign Military Digests" Section]
Jungle warfare. [See page 53]
The German foot infantry division. [See page 34]
The essence of morale. [See page 50]

ARTILLERY
Organization and Equipment
Artillery fuzes. (A Ord — May-Jun 1942)
What about the service battery? (FA Jour — Apr 1942)
The Compass, M2. (FA Jour — May 1942)

Supply
Artillery ammunition supply. (FA Jour — Apr 1942)

Training Tactics
Luzon diary. (FA Jour — Apr 1942)
Corregidor Cable No. 79. (FA Jour — Apr 1942)
Tobruk diary. (FA Jour — Apr 1942)
Speed up your surveys. (FA Jour — Apr 1942)
Radio support in rapid movements. (FA Jour — Apr 1942)
Maneuver of the light battalion. (FA Jour — May 1942)
Really rapid support. (FA Jour — May 1942)
"Tank attackers" in action. (FA Jour — May 1942)
Communication problems. (FA Jour — May 1942)
The unexpected always happens. (FA Jour — May 1942)
Graphical analysis of gun practices. (Jour R Art — Jan 1942)
Experiences in France. (Jour R Art — Jan 1942)
Field artillery in the attack. (Jour R Art — Apr 1942)
The "G" in Gap. (Jour R Art — Apr 1942)
Assault engineer. (Jour RUSI — Feb 1942)
Conduct of fire with an advanced observation post. (Def Nac — Feb 1942)
Fire instruction for officers. (Def Nac — Mar 1942)

Weapons
Sea artillery. (FA Jour — May 1942)
Artillery weapons in a field force. (Jour R Art — Apr 1942)

ASIA
China, America and the world after the war. (Asia — Jun 1942)

ATTACK
Reinforced battalion in attack. (An Cos — Mar 1942)
Field artillery in the attack. (Jour R Art — Apr 1942)
Night attack in the mountains. [See "Foreign Military Digests" Section]

AUSTRALIA
Australia, keystone of Far Eastern strategy. (For Aff — Apr 1942)
Australia: Bastion and springboard. (Harper's — Apr 1942)

AUSTRALIA (ARMY OF)
They ride again. (Cav Jour — Mar-Apr 1942)

B

BARRAGE BALLOONS
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BATAAN
Perimeters in paragraphs. (FA Jour — May 1942)

C

CAMOUFLAGE
Camouflage vs. mission failure. (Cav Jour — Mar-Apr 1942)
Camouflage hints. (CA Jour — Mar-Apr 1942)
The defence of blockhouses. (An Cos — Mar 1942)
Camouflage — then and now. (Mil Eng — Apr 1942)

CANADA (ARMY OF)
How a great air army was built. (Fortune — Apr 1942)

CAVALRY
Organization and Equipment
Machine guns in cavalry. (Rev Mil — Feb 1942)
The motor vehicle and our cavalry. (Rev Mil — Feb 1942)
The horse goes back to war. (Vet Bul — Apr 1942)
Horses for the army. (Country Life — Apr 1942)

Training Tactics
Japanese cavalry. (Cav Jour — Mar-Apr 1942)
They ride again. (Cav Jour — Mar-Apr 1942)
Horse sense and horse power. (Cav Jour — Mar-Apr 1942)
The Cavalry Replacement Training Center. (Cav Jour — Mar-Apr 1942)
Loading horses in portee trailer. (Cav Jour — Mar-Apr 1942)
Smoke saves the day. (Chem War Bul — Apr 1942)
Machine guns in cavalry. (Rev Mil — Jan 1942)

CENSORSHIP
Notes on military censorship. (FA Jour — May 1942)
Naval censorship in 1914. (Nav Inst Proc — May 1942)

CENTRAL AMERICA
Our Balkans — Central America! (FA Jour — Apr 1942)

CHEMICAL SERVICE
Chemistry in warfare. (A Ord — Mar-Apr 1942)
Chemical defense. (A Ord — Mar-Apr 1942)
Protection against war chemicals. (A Ord — Mar-Apr 1942)
Smoke saves the day. (Chem War Bul — Apr 1942)
Chemistry in warfare. (Chem War Bul — Apr 1942)
Get-a-way screen for scout cars. (Chem War Bul — Apr 1942)
Bomb shelters. (Chem War Bul — Apr 1942)
War products from petroleum. (Chem War Bul — Apr 1942)
Chemical attacks. (Defensa — Apr 1942)
Chemical warfare. [See page 23]
Smoke saves the day. [See page 47]

CHINA
The Chinese and their lands. (Mil Eng — May 1942)

CHINA (ARMY OF)
China asks India whether it will fight. (Life — 27 April 1942)
Chinese pilots. (Life — 4 May 1942)

CIVILIAN DEFENSE
The civilian element in the national fighting team. (Mil Eng — May 1942)

COAST ARTILLERY
Defense against low flying aircraft. (CA Jour — Mar-Apr 1942)
Camouflage hints. (CA Jour — Mar-Apr 1942)
The horizontal fire problem. (CA Jour — Mar-Apr 1942)
Identification of aircraft. (CA Jour — Mar-Apr 1942)
Talking to the eye. (CA Jour — Mar-Apr 1942)
Something different in spotting charts. (CA Jour — Mar-Apr 1942)
Doctoring the drift. (CA Jour — Mar-Apr 1942)
The story of artillery through the ages. (CA Jour — Mar-Apr 1942)
Coast artillery. (Defensa — Apr 1942)

COMMAND, STAFF, AND LOGISTICS
Basic factors in the training of the soldier. (A Quar — Jan 1942)
Completed staff work. (Cav Jour — Mar-Apr 1942)
The company commander. (An Cos — Mar 1942)
How shall we win? (Nav Inst Proc — Apr 1942)
The wings of sea power. (Nav Inst Proc — Apr 1942)
The functions of command. (Nav Inst Proc — May 1942)
The relief of units during combat. (Rev Mil — Feb 1942)
The dangerous struggle in our war command. (Amer Mer — Jun 1942)
A combined general staff. (Times [London] — 15 Apr 1942)
The combat team in an infantry division. [See page 5]
Our system of evacuation in the combat zone. [See page 20]
The birth of an infantry division. [See page 16]
Division commander and staff. [See page 7]

COMMANDOS
Commandos — modern suicide troops. (NY Times Mag — 5 Apr 1942)

COMMUNISM
Nazism and Communism. (Jour USII — Oct 1941)

D

DEMOCRACY
Democracy and the training of leaders. (Jour USII — Oct 1941)

DEMOLITIONS
Electrical firing in bridge demolitions. (An Cos — Apr 1942)
Demolition of a masonry bridge. (An Cos — Apr 1942)
Demolitions during the Louisiana maneuvers. (Mil Eng — May 1942)

DESERT WARFARE
Safari on wings. (AF News Let — Mar-Apr 1942)
The operations in the Southern Desert, Iraq, 1927-28. (Jour USII — Oct 1941)
New warfare in Libyan Desert. (Times [London] — 8 Apr 1942)

E

EFFICIENCY
Some reflections on efficiency. (Jour R Art — Apr 1942)

EGYPT
Egyptian-Libyan borderlands. (Geog Rev — Apr 1942)

ENCIRCLEMENT
Epic of an encircled Russian unit. [See "Foreign Military Digests" Section]

ENGINEERS
Planning the camp. (Ftg Forc — Apr 1942)
Camouflage vs. mission failure. (Cav Jour — Mar-Apr 1942)
The defence of blockhouses. (An Cos — Mar 1942)
Electrical firing in bridge demolitions. (An Cos — Apr 1942)
Demolition of a masonry bridge. (An Cos — Apr 1942)
Stream crossing methods. (Inf Jour — May 1942)
Assault engineer. (Jour RUSI — Feb 1942)
A simple combat range. (Mil Eng — Apr 1942)
Soil-cement for army airports and runways. (Mil Eng — Apr 1942)
Bomb disposal policies. (Mil Eng — Apr 1942)
Simplified stream crossing equipment. (Mil Eng — Apr 1942)
Camouflage — then and now. (Mil Eng — Apr 1942)
The Channel tunnel. (Mil Eng — May 1942)
The politico-military strategy of the Nazis. (Mil Eng — May 1942)
Demolitions during the Louisiana maneuvers. (Mil Eng — May 1942)
Care of instruments in unfavorable weather. (Mil Eng — May 1942)
A corps field park company, Royal Engineers. (Roy Eng Jour — Mar 1942)
The siting of a divisional field park company. (Roy Eng Jour — Mar 1942)

F

FLAME THROWERS
The flame-thrower. (An Cos — Apr 1942)

FORTIFICATIONS
The defence of blockhouses. (AN Cos — Mar 1942)
With the shock companies into the citadel of Brest. [See "Foreign Military Digests" Section]

G

GALAPAGOS ISLANDS
The Galápagos. (Nav Inst Proc — May 1942)

GEOGRAPHY (MILITARY)
Arctic lifeline. (An Cos — Apr 1942)
Our Balkans — Central America! (FA Jour — Apr 1942)
Perimeters in paragraphs. (FA Jour — May 1942)
Oahu on the eve of the attack. (FA Jour — May 1942)
Geopolitics and today's war. (Inf Jour — May 1942)
The Chinese and their lands. (Mil Eng — May 1942)
The Galápagos. (Nav Inst Proc — May 1942)
Geography and naval power, with respect to the present war. (Def Nac — Mar 1942)
Land utilization and agriculture of Mindanao, Philippine Islands. (Geog Rev — Apr 1942)
Settlement patterns in Malaya. (Geog Rev — Apr 1942)
Egyptian-Libyan borderlands. (Geog Rev — Apr 1942)
Spanish territorial boundary changes in North Africa. (Geog Rev — Apr 1942)
Australia: Bastion and springboard. (Harper's — Apr 1942)
Treasure Islands of Australasia. (Nat Geog — Jun 1942)
Americans in the Caribbean. (Nat Geog — Jun 1942)
War echoes in the West Indies. (Nat Geog — Jun 1942)
Hidden key to the Pacific. (Nat Geog — Jun 1942)
Madagascar: Mystery Island. (Nat Geog — Jun 1942)

GEOGRAPHY (POLITICAL)
Political geography of power. (Geog Rev — Apr 1942)

GEOPOLITICS
Geopolitics and today's war. (Inf Jour — May 1942)

GERMANY
Nazism and Communism. (Jour USII — Oct 1941)

GERMANY (ARMY OF)
Command and Staff
Hitler and Russia. (Times [London] — 15 Apr 1942)
The War of 1914 as interpreted by German intellectuals. (Jour Mod Hist — Jun 1942)
When will the decision be attained? [See "Foreign Military Digests" Section]

Mobilization
German re-armament (1919-1939). (Jour R Art — Apr 1942)

Organization and Equipment
German re-armament (1919-1939). (Jour R Art — Apr 1942)
Sex is a Nazi weapon. (Amer Mer — Jun 1942)
German Labor Service in action. [See "Foreign Military Digests" Section]
Some notes on German tactics and training. [See "Foreign Military Digests" Section]
The German foot infantry division. [See page 34]

Supply
Supplies from France. (Aero — 6 Mar 1942)

Training
They catch 'em with their flaps down. (AF News Let — Mar-Apr 1942)
Geopolitics and today's war. (Inf Jour — May 1942)
The politico-military strategy of the Nazis. (Mil Eng — May 1942)
Some notes on German tactics and training. [See "Foreign Military Digests" Section]
With the shock companies into the citadel of Brest. [See "Foreign Military Digests" Section]
The German foot infantry division. [See page 34]

GREAT BRITAIN (ARMY OF)

Auxiliary Military Forces
India's war contribution. (Tank — Apr 1942)

Command and Staff
A combined general staff. (Times [London] — 15 Apr 1942)
Notes for young officers on leadership. [See "Foreign Military Digests" Section]

Organization and Equipment
Planning the camp. (Ftg Forc — Apr 1942)
The Stirling. (Aero — 27 Feb 1942)
Underground aircraft factories. (Aero — 6 Mar 1942)
Army of the people. (Inf Jour — May 1942)
Bomb disposal policies. (Mil Eng — Apr 1942)
Why British soldiers complain. (Amer Mer — Jun 1942)

Supply
Britain's supply problem. (QM Rev — Mar-Apr 1942)

Training
The reconnaissance corps. (Ftg Forc — Apr 1942)
In defense of air bases. (Aero — 16 Jan 1942)
For the suppression of mischiefs. (Aero — 27 Feb 1942)
Guerrilla fighting by air. (Aero — 13 Mar 1942)
The future of bombing. (Aero — 13 Mar 1942)
The Australian front. (AF News Let — Mar-Apr 1942)
Viscount Gort's despatches. (A Quar — Jan 1942)
Basic factors in the training of the soldier. (A Quar — Jan 1942)
Mare Nostrum. (Jour R Art — Apr 1942)
Hints for officer instructors. (Jour RUSI — Feb 1942)
The operations in the Southern Desert, Iraq, 1927-28. (Jour USII — Oct 1941)
The air war of 1941. (RAF Quar — Mar 1942)
Intelligence tests. (Tank — Mar 1942)
Commandos — modern suicide troops. (NY Times Mag — 5 Apr 1942)
The R.A.F. in Libya. (Times [London] — 8 Apr 1942)
Mastering the art of blind flying. (Times [London] — 6 May 1942)

GREAT BRITAIN (NAVY OF)
The new method of warfare. (Nav Inst Proc — Apr 1942)
The British navy keeps that Nelson touch. [See page 19]

GUERRILLA WARFARE
Guerrilla fighting by air. (Aero — 13 Mar 1942)
Guerrilla warfare. (Inf Jour — Apr 1942)
"Blitzkrieg." (Jour RAMC — Mar 1942)
Guerrillas on Oregon coast ready their guns for an enemy invasion. (Life — 6 Apr 1942)
Commandos — modern suicide troops. (NY Times Mag — 5 Apr 1942)

H

HAWAII
Oahu on the eve of the attack. (FA Jour — May 1942)
Remember Pearl Harbor! (Inf Jour — Apr 1942)
Hawaii at war. (Life — 11 May 1942)

I

INDIA (ARMY OF)
India's war contribution. (Tank — Apr 1942)
What happened in India? (Asia — Jun 1942)
India's fighting strength. (For Aff — Apr 1942)
China asks India whether it will fight. (Life — 27 Apr 1942)

INDIAN OCEAN
Strategy of the Indian Ocean. (Asia — Jun 1942)

INFANTRY

Organization and Equipment
The reconnaissance corps. (Ftg Forc — Apr 1942)
The combat team in an infantry division. [See page 5]
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Training Tactics
The place of infantry. (Inf Jour — Apr 1942)
A rifle platoon stalks five night-bound tanks. (Inf Jour — Apr 1942)
The "G" in Gap. (Jour R Art — Apr 1942)
Assault engineer. (Jour RUSI — Feb 1942)
Infantry. (Rev Mil — Jan 1942)
Comparative firing experiments in infantry. (Rev Mil — Jan 1942)
The combat team in an infantry division. [See page 5]
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Infantry fire in high mountain terrain. [See "Foreign Military Digests" Section]
The German foot infantry division. [See page 34]

Weapons
Infantry battalion gun (Japanese). (Cav Jour — Mar-Apr 1942)
Infantry fire in high mountain terrain. [See "Foreign Military Digests" Section]
The German foot infantry division. [See page 34]

INTELLIGENCE (MILITARY)
Notes on military censorship. (FA Jour — May 1942)

INTELLIGENCE (NAVAL)
Naval censorship in 1914. (Nav Inst Proc — May 1942)

INTERNATIONAL POLICE FORCE
Russia and the world. (Ftg Forc — Apr 1942)

INTERNATIONAL RELATIONS
Russia and the world. (Ftg Forc — Apr 1942)
The Channel tunnel. (Mil Eng — May 1942)
Joint action to protect an American state from Axis subversive activity. (A Jour — Int Law — Apr 1942)
China, America and the world after the war. (Asia — Jun 1942)
Latin America and the future. (Round Table — Mar 1942)

INTERNMENT CAMPS
West Coast Japs are interned in mountain camp. (Life — 6 Apr 1942)

IRAQ
The operations in the Southern Desert, Iraq, 1927-28. (Jour USII — Oct 1941)

ITALY (ARMY OF)
Italian losses. (Aero — 6 Mar 1942)

J

JAPAN (ARMY OF)
Japanese mechanization. (Cav Jour — Mar-Apr 1942)
Japanese military terms and characters. (Cav Jour — Mar-Apr 1942)
Japanese cavalry. (Cav Jour — Mar-Apr 1942)
Infantry battalion gun (Japanese). (Cav Jour — Mar-Apr 1942)
Signal communications and equipment (Japanese). (Cav Jour — Mar-Apr 1942)
Landing operations (Japanese). (CA Jour — Mar-Apr 1942)
Those amphibious Japanese. (CA Jour — Mar-Apr 1942)
Japanese tactics. (FA Jour — Apr 1942)
The Japanese Army. (Inf Jour — Apr, May 1942)
Japan's air strength. (Jour RUSI — Feb 1942)
Checking the Japanese record. (Nav Inst Proc — Apr 1942)
Invasion tactics of Japanese follow pattern tested in China. (Res Off — Mar 1942)
America's Enemy No. 2: Yamamoto. (Harper's — Apr 1942)
One way to cripple Japan. (Harper's — Jun 1942)
How Japan wages war. (Life — 11 May 1942)
Japanese fighting spirit. [See page ....]
A visit to the Japanese Military Academy. [See "Foreign Military Digests" Section]

JAPAN (NAVY OF)
Those amphibious Japanese. (CA Jour — Mar-Apr 1942)
Sea artillery. (FA Jour — May 1942)
Checking the Japanese record. (Nav Inst Proc — Apr 1942)
The new method of warfare. (Nav Inst Proc — Apr 1942)

JAVA
Can Java be Japanized? (Asia — Jun 1942)

JOINT OPERATIONS
Co-operation or co-ordination. (Ftg Forc — Apr 1942)
Must sea power win? (A Ord — Mar-Apr 1942)
Landing operations (Japanese). (Cav Jour — Mar-Apr 1942)
Those amphibious Japanese. (CA Jour — Mar-Apr 1942)
Naval gunfire support of landing troops. (FA Jour — Apr 1942)
The wings of sea power. (Nav Inst Proc — Apr 1942)
Invasion tactics of Japanese follow pattern tested in China. (Res Off — Mar 1942)

JUNGLE WARFARE
Safari on wings. (AF News Let — Mar-Apr 1942)
Jungle warfare. (Inf Jour — Apr, May 1942)
Jungle warfare. [See page 53]

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LANDING OPERATIONS
Landing operations (Japanese). (Cav Jour — Mar-Apr 1942)
Those amphibious Japanese. (CA Jour — Mar-Apr 1942)
Naval gunfire support of landing troops. (FA Jour — Apr 1942)
Japanese tactics. (FA Jour — Apr 1942)
Invasion tactics of Japanese follow pattern tested in China. (Res Off — Mar 1942)

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LATIN AMERICA
Latin America and the future. (Round Table — Mar 1942)

LAW (INTERNATIONAL)
Russia and the world. (Ftg Forc — Apr 1942)
Joint action to protect an American state from Axis subversive activity. (A Jour Int Law — Apr 1942)

LAW (MILITARY)
Clemency in the United States Army. (Res Off — Mar 1942)

LEADERSHIP
The men who lead Russia's air forces. (Ftg Forc — Apr 1942)
Officer training. (A Ord — May-Jun 1942)
The company commander. (An Cos — Mar 1942)
Notes for young officers on leadership. (Jour R Art — Jan 1942)
Democracy and the training of leaders. (Jour USII — Oct 1941)
How shall we win? (Nav Inst Proc — Apr 1942)
The functions of command. (Nav Inst Proc — May 1942)
The dangerous struggle in our war command. (Amer Mer — Jun 1942)
Moscow's miracle man (Marshal Timoshenko). (Asia — Jun 1942)
Night combat. [See "Foreign Military Digests" Section]
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Co-operation or co-ordination. (Ftg Forc — Apr 1942)
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Assault engineer. (Jour RUSI — Feb 1942)
Air support. (Res Off — Mar 1942)
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LIBYA
Egyptian-Libyan borderlands. (Geog Rev — Apr 1942)

M

MACHINE GUNS
Machine-guns: general considerations. (An Cos — Apr 1942)
Machine guns in cavalry. (Rev Mil — Jan 1942)

MALAYA
Settlement patterns in Malaya. (Geog Rev — Apr 1942)

MALTA
Malta. (Life — 4 May 1942)

MANEUVERS
Ordnance in the field. (A Ord — May-Jun 1942)
Smoke saves the day. (Chem War Bul — Apr 1942) [See also page 47]
"Tank Attackers" in action. (FA Jour — May 1942)
A solution for traffic problems. (FA Jour — May 1942)
Demolitions during the Louisiana maneuvers. (Mil Eng — May 1942)
Air support. (Res Off — Mar 1942)

MARCHES
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MARINE CORPS
An aerial blitzkrieg in miniature. (MC Gaz — Mar 1942)
Fighting and writing: the two "G"s? (MG Caz — Mar 1942)
Miniature range for anti-mechanized training. (MC Gaz — Mar 1942)
A simple aptitude examination. (MC Gaz — Mar 1942)
Moving target range fixtures. (MC Gaz — Mar 1942)
Almanac of the Marine Corps. (MC Gaz — Mar 1942)

MECHANIZATION
The reconnaissance corps. (Ftg Forc — Apr 1942)
Japanese mechanization. (Cav Jour — Mar-Apr 1942)

MEDICAL SERVICE
Plans for a medical history of the emergency. (A Med Bul — Jan 1942)
Influenza. (A Med Bul — Jan 1942)
Blood and plasma transfusions in the armed services. (A Med Bul — Jan 1942)
Medical and sanitary care of the civilian population necessitated by attacks from hostile aircraft. (A Med Bul — Jan 1942)
The use of salt in the prevention of heat fatigue and exhaustion. (A Med Bul — Jan 1942)
The treatment of army casualties in Hawaii. (A Med Bul — Apr 1942)
First hand lessons at Pearl Harbor. (A Med Bul — Apr 1942)
The prevention of infection in wounds and burns. (A Med Bul — Apr 1942)
Physical examinations for military service. (A Med Bul — Apr 1942)
Health of the army in the United States during winter months. (A Med Bul — Apr 1942)
The battalion medical officer. (A Med Bul — Apr 1942)
A general perspective of the U.S. Army medical service. (A Med Bul — Apr 1942)
Venereal disease control officers. (A Med Bul — Apr 1942)
Mobile surgical unit, First Armored Division. (Cav Jour — Mar-Apr 1942)
Division medical service during movements. (Defensa — Apr 1942)
"Soldier, sailor or ruddy doctor." (Jour RAMC — Mar 1942)
The recognition of impurities in water. (Jour RAMC — Mar 1942)
The military implications of psychiatry. (Jour RAMC — Mar 1942)
The preparation of solutions for injection at a casualty clearing station. (Jour RAMC — Mar 1942)
Organization of psychiatric service in a naval hospital. (Mil Surg — Apr 1942)
War neuroses. (Mil Surg — Apr 1942)
Teaching field sanitation to troops in the field. (Mil Surg — Apr 1942)
National Police Hospital, Havana, Cuba. (Mil Surg — Apr 1942)

Thirteen cases of meningitis treated with serum and sulfonomides at Station Hospital, Fort Dix, N.J. (Mil Surg — Apr 1942)
Treatment of trichophyton foot infections in the field. (Mil Surg — Apr 1942)
Identification of radiographs in the field. (Mil Surg — Apr 1942)
Simple hand washing set-up for straddle trench latrine. (Mil Surg — Apr 1942)
Sulfur and soap as effective prophylaxis against "chiggers" (Red Bugs) in the army. (Mil Surg — Apr 1942)
Soap and water as a venereal disease prophylactic. (Mil Surg — Apr 1942)
Medical service of a square division — one year of active duty. (Mil Surg — May 1942)
Wound therapy. (Mil Surg — May 1942)
The cause and prevention of weak feet. (Mil Surg — May 1942)
Nature's way. I. Military effectiveness. (Mil Surg — May 1942)
Bacterial warfare. (Mil Surg — May 1942)
Our system of evacuation in the combat zone. [See page 20]
Hygiene and the march. [See "Foreign Military Digests" Section]

MOBILE WARFARE
Future naval forces. (Nav Inst Proc — May 1942)

MOBILITY
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MOBILIZATION
Quantity and quality. (Cav Jour — Mar-Apr 1942)

Industrial Mobilization
Industrial mobilization. (A Ord — Mar-Apr 1942)
The conversion of Forry Laucks. (Fortune — Apr 1942)
The crisis in man power. (Harper's — Apr 1942)
Civil air patrol. (Life — 27 Apr 1942)
Expansion of war plant capacity. (Proc A Pol Sci — May 1942)
The artificial rubber industry. (Proc A Pol Sci — May 1942)
Using the technical resources of the country. (Proc A Pol Sci — May 1942)
The Russian labour front. (Times [London] — 8 Apr 1942)

MORALE
How shall we win? (Nav Inst Proc — Apr 1942)
The functions of command. (Nav Inst Proc — May 1942)
Pacific coast morale. (Asia — Jun 1942)
The psychology of troops in defense. [See "Foreign Military Digests" Section]
The essence of morale. [See page 50]

MOTORIZATION
Army motor transport. (A Ord — Mar-Apr 1942)
The Cavalry Replacement Training Center. (Cav Jour — Mar-Apr 1942)
Loading horses in portee trailer. (Cav Jour — Mar-Apr 1942)
Care of transport. (An Cos — Apr 1942)
The colonel inspects his motors. (Inf Jour — Apr 1942)
Driver training. (Inf Jour — May 1942)
The motor vehicle and our cavalry. (Rev Mil — Feb 1942)
Motorization of a baggage section. (Def Nac — Feb 1942)

N

NATIONAL DEFENSE
Woman's part in national defense. (An Cos — Apr 1942)
The civilian element in the national fighting team. (Mil Eng — May 1942)
Joint action to protect an American state from Axis subversive activity. (A Jour Int Law — Apr 1942)
Pacific coast morale. (Asia — Jun 1942)
The crisis in man power. (Harper's — Apr 1942)
Civil air patrol. (Life — 27 Apr 1942)

NAVAL WARFARE
The Channel battle. (Ftg Forc — Apr 1942)
Must sea power win? (Ftg Forc — Mar-Apr 1942)
The war at sea (August-October 1941). (A Quar — Jan 1942)
Naval gunfire support of landing troops. (FA Jour — Apr 1942)
Sea artillery. (FA Jour — May 1942)
An aerial blitzkrieg in miniature. (MC Gaz — Mar 1942)
Victory: In war and peace. (Nav Inst Proc — Apr 1942)
The wings of sea power. (Nav Inst Proc — Apr 1942)
The navy gunboat Vicksburg captures a German sea raider. (Nav Inst Proc — Apr 1942)
The new method of warfare. (Nav Inst Proc — Apr 1942)
Future naval forces. (Nav Inst Proc — May 1942)
The Galápagos. (Nav Inst Proc — May 1942)
The functions of command. (Nav Inst Proc — May 1942)
Air power 1913-43. (Nav Inst Proc — May 1942)
Strategy of the Indian Ocean. (Asia — Jun 1942)
Bombs away! (Collier's — 9 May 1942)
The No. 1 bottleneck now is lack of ships. (Fortune — May 1942)
The British Navy keeps that Nelson touch. [See page 19]

NAZISM
Nazism and Communism. (Jour USII — Oct 1941)

NIGHT OPERATIONS
Reflections of a bomber pilot. (AF News Let — Mar-Apr 1942)
Japanese tactics. (FA Jour — Apr 1942)
Night combat. [See "Foreign Military Digests" Section]
Night attack in the mountains. [See "Foreign Military Digests" Section]

O

OIL
War products from petroleum. (Chem War Bul — Apr 1942)

ORDNANCE
Supertanks. (A Ord — Mar-Apr 1942)
Officer training. (A Ord — May-Jun 1942)
Key to arms production. (A Ord — May-Jun 1942)
Artillery fuzes. (A Ord — May-Jun 1942)
Ordnance in the field. (A Ord — May-Jun 1942)

ORGANIZATION (MILITARY)
The fighting unit. (A Ord — Mar-Apr 1942)
Army reorganization. (A Ord — May-Jun 1942)
Fighting and writing: the two "G"s? (MC Gaz — Mar 1942)

P

PANAMA CANAL
The Galápagos. (Nav Inst Proc — May 1942)

PARCHUTES
Shoot the 'chuters. (Inf Jour — May 1942)
Parachutes coming down. (International military survey) (Inf Jour — May 1942)
The ground defence of aerodromes. (Jour R Art — Apr 1942)
Emergency oxygen supply while parachuting. (U.S. Air Services — Apr 1942)

PHILIPPINE ISLANDS
Perimeters in paragraphs. (FA Jour — May 1942)
Land utilization and agriculture of Mindanao, Philippine Islands. (Geog Rev — Apr 1942)

PLASMA
Blood and plasma transfusions in the armed services. (A Med Bul — Jan 1942)

PSYCHOLOGY (MILITARY)
The psychology of troops in defense. [See "Foreign Military Digests" Section]

Q

QUARTERMASTER SERVICE
Army motor transport. (A Ord — Mar-Apr 1942)
The colonel inspects his motors. (Inf Jour — Apr 1942)
Clothing and equipage. (QM Rev — Mar-Apr 1942)
The Standardization Branch. (QM Rev — Mar-Apr 1942)
Procurement. (QM Rev — Mar-Apr 1942)
The woolen uniform. (QM Rev — Mar-Apr 1942)
Distribution of clothing and equipment. (QM Rev — Mar-Apr 1942)
Keeping the right clothing sizes on hand. (QM Rev — Mar-Apr 1942)
Cold climate clothing. (QM Rev — Mar-Apr 1942)

R

RECONNAISSANCE
The reconnaissance corps. (Ftg Forc — Apr 1942)

REMOUNT SERVICE
A temporary remount depot. (Vet Bul — Apr 1942)
Horses for the army. (Country Life — Apr 1942)
I watched the Army Remount Service grow. (Horse — Mar-Apr 1942)
Army remount program discussed at Fort Robinson conference. (Horse — Mar-Apr 1942)

RIVER CROSSINGS
Japanese tactics. (FA Jour — Apr 1942)
Stream crossing methods. (Inf Jour — May 1942)
Simplified stream crossing equipment. (Mil Eng — Apr 1942)
Some notes on German tactics and training. [See "Foreign Military Digests" Section]

ROUTES COMMUNICATIONS
Airways
War-time transport in Europe. (Aero — 13 Mar 1942)
Our air lines accept Axis challenge. (U.S. Air Services — May 1942)
Aircraft in peace and in war. (U.S. Air Services — May 1942)

Highways Military Roads
An Arctic route to Siberia. (New Rep — 18 May 1942)

Railways
Railways in war time. (Defensa — Apr 1942)
The Trans-Persian railway. (Jour RUSI — Feb 1942)

Tunnels
The Channel tunnel. (Mil Eng — May 1942)

RUSSIA (ARMY OF)
Russia and the world. (Ftg Forc — Apr 1942)
The men who lead Russia's air forces. (Ftg Forc — Apr 1942)
Moscow's miracle man (Marshal Timoshenko). (Asia — Jun 1942)
Round Two in Russia. (Fortune — May 1942)
The Russian labour front. (Times [London] — 8 Apr 1942)
Hitler and Russia. (Times [London] — 15 Apr 1942)
Russia takes stock. (Times [London] — 6 May 1942)
Bismarck, Russia, and the origins of the War of 1870. (Jour Mod Hist — Jun 1942)
Epic of an encircled Russian unit. [See "Foreign Military Digests" Section]
U.S.S.R. air force. [See "Foreign Military Digests" Section]
The "Ossoaviakhim" and air forces of the Soviet Union. [See "Foreign Military Digests" Section]
Soviet ski troops. [See "Foreign Military Digests" Section]

S

SEA POWER
Must sea power win? (A Ord — Mar-Apr 1942)
Victory: In war and peace. (Nav Inst Proc — Apr 1942)
The wings of sea power. (Nav Inst Proc — Apr 1942)
Geography and naval power, with respect to the present war. (Def Nac — Mar 1942)
Australia, keystone of Far Eastern strategy. (For Aff — Apr 1942)
The No. 1 bottleneck now is lack of ships. (Fortune — May 1942)

SHELTERS
Bomb shelters. (Chem War Bul — Apr 1942)

SIGNAL SERVICE
Signal communications and equipment (Japanese). (Cav Jour — Mar-Apr 1942)
On "breaking" ciphers. (An Cos — Apr 1942)
Radio support in rapid movements. (FA Jour — Apr 1942)
Communication problems. (FA Jour — May 1942)

SKI TROOPS
Soviet ski troops. [See "Foreign Military Digests" Section]

SUBMARINES
Torpedoes sprout wings. (AF News Let — Mar-Apr 1942)
Bombs away! (Collier's — 9 May 1942)

SUPPLY
Supplies from France. (Aero — 6 Mar 1942)
Underground aircraft factories. (Aero — 6 Mar 1942)
Air service command supplies the world. (AF News Let — Mar-Apr 1942)
Key to arms production. (A Ord — May-Jun 1942)
Ordnance in the field. (A Ord — May-Jun 1942)
War products from petroleum. (Chem War Bul — Apr 1942)
Artillery ammunition supply. (FA Jour — Apr 1942)
Clothing and equipage. (QM Rev — Mar-Apr 1942)
The Standardization Branch. (QM Rev — Mar-Apr 1942)
Procurement. (QM Rev — Mar-Apr 1942)
The woolen uniform. (QM Rev — Mar-Apr 1942)
Distribution of clothing and equipment. (QM Rev — Mar-Apr 1942)
Keeping the right clothing sizes on hand. (QM Rev — Mar-Apr 1942)
Cold climate clothing. (QM Rev — Mar-Apr 1942)
Britain's supply problem. (QM Rev — Mar-Apr 1942)
Our flexible combat supply. (QM Rev — Mar-Apr 1942)
A corps field park company, Royal Engineers. (Roy Eng Jour — Mar 1942)
India's fighting strength. (For Aff — Apr 1942)
An Arctic route to Siberia. (New Rep — 18 May 1942)
Expansion of war plant capacity. (Proc A Pol Sci — May 1942)
The artificial rubber industry. (Proc A Pol Sci — May 1942)
Using the technical resources of the country. (Proc A Pol Sci — May 1942)
Man power and woman power. (Round Table — Mar 1942)
The combat team in an infantry division. [See page 5]
When will the decision be attained? [See "Foreign Military Digests" Section]
The Swiss mountain ration. [See "Foreign Military Digests" Section]
Jungle warfare. [See page 53]

SWEDEN (NAVY OF)
Maritime training of Sweden's youth. (Nav Inst Proc — May 1942)

SWITZERLAND (ARMY OF)
The Swiss mountain ration. [See "Foreign Military Digests" Section]
War in high mountains. [See "Foreign Military Digests" Section]

T

TACTICS OPERATIONS
Defensive Combat
The defence of blockhouses. (An Cos — Mar 1942)
The wings of sea power. (Nav Inst Proc — Apr 1942)
The defense of Trobruk and the break-out. (Times [London] — 8 Apr 1942)
The psychology of troops in defense. [See "Foreign Military Digests" Section]

Offensive Combat
Reinforced battalion in attack. (An Cos — Mar 1942)
Japanese tactics. (FA Jour — Apr 1942)
"Blitzkrieg." (Jour RAMC — Mar 1942)
Field artillery in the attack. (Jour R Art — Apr 1942)
Assault engineer. (Jour RUSI — Feb 1942)
The wings of sea power. (Nav Inst Proc — Apr 1942)
Future naval forces. (Nav Inst Proc — May 1942)
Pursuit. (Rev Mil — Jan 1942)
Where to take the offensive. (Harper's — May 1942)
Night attack in the mountains. [See "Foreign Military Digests" Section]

Special Warfare
Guerrilla fighting by air. (Aero — 16 Jan 1942)
Safari on wings. (AF News Let — Mar-Apr 1942)
Guerrilla warfare. (Inf Jour — Apr 1942)
Jungle warfare. (Inf Jour — Apr, May 1942)

"Blitzkrieg." (Jour RAMC — Mar 1942)
The operations in the Southern Desert, Iraq, 1927-28. (Jour USII — Oct 1941)
Some aspects of forest warfare. (Jour USII — Oct 1941)
Combat in towns. (Def Nac — Feb 1942)
Guerrillas on Oregon coast ready their guns for an enemy invasion. (Life — 6 Apr 1942)
Commandos — modern suicide troops. (NY Times Mag — 5 Apr 1942)
New warfare in Libyan Desert. (Times [London] — 8 Apr 1942)
Infantry fire in high mountain terrain. [See "Foreign Military Digests" Section]
Soviet ski troops. [See "Foreign Military Digests" Section]
The Swiss mountain ration. [See "Foreign Military Digests" Section]
Night combat. [See "Foreign Military Digests" Section]
Night attack in the mountains. [See "Foreign Military Digests" Section]
War in high mountains. [See "Foreign Military Digests" Section]
Jungle warfare. [See page 53]
Mountain warfare. [See page 57]

TANKS

Supertanks. (A Ord — Mar-Apr 1942)
Japanese mechanization. (Cav Jour — Mar-Apr 1942)
"Tank Attackers" in action. (FA Jour — May 1942)
A rifle platoon stalks five night-bound tanks. (Inf Jour — Apr 1942)
"Blitzkrieg." (Jour RAMC — Mar 1942)
Miniature range for anti-mechanized training. (MC Gaz — Mar 1942)
The Calais epic. (Tank — Mar 1942)
New warfare in Libyan Desert. (Times [London] — 8 Apr 1942)
The defence of Tobruk and the break-out. (Times [London] — 8 Apr 1942)
Epic of an encircled Russian unit. [See "Foreign Military Digests" Section]
Antitank gun versus tank. [See "Foreign Military Digests" Section]

TERMINOLOGY (MILITARY)

Japanese military terms and characters. (Cav Jour — Mar-Apr 1942)

TIMOSHENKO, Marshal Semyon (1895-)

Moscow's miracle man (Marshal Timoshenko) (Asia — Jun 1942)

TOPOGRAPHY SURVEYING

Maps Mapping

Maps for combat. (Inf Jour — May 1942)
Reading a map. (Jour R Art — Apr 1942)

TRAFFIC CONTROL

A solution for traffic problems. (FA Jour — May 1942)

TRANSPORTATION

War-time transport in Europe. (Aero — 13 Mar 1942)
Air service command supplies the world. (AF News Let — Mar-Apr 1942)
Gliders play important role in AAF war plans. (AF News Let — Mar-Apr 1942)
Army motor transport. (A Ord — Mar-Apr 1942)
Care of transport. (An Cos — Apr 1942)
Railways in war time. (Defensa — Apr 1942)
Artillery ammunition supply. (FA Jour — Apr 1942)
A solution for traffic problems. (FA Jour — May 1942)
Driver training. (Inf Jour — May 1942)
The Trans-Persian railway. (Jour RUSI — Feb 1942)
Our air lines accept Axis challenge. (U.S. Air Services — May 1942)
Aircraft in peace and in war. (U.S. Air Services — May 1942)
Jungle warfare. [See page 53]

TROOP MOVEMENTS

A solution for traffic problems. (FA Jour — May 1942)
Hygiene and the march. [See "Foreign Military Digests" Section]

U

UNITED STATES (ARMY OF)

Command and Staff

Paperwork. (Inf Jour — May 1942)

Finance

National service life insurance. (Inf Jour — Apr 1942)

Forts and Military Establishments

Horses for the army. (Country Life — Apr 1942)

Military Law

Clemency in the United States Army. (Res Off — Mar 1942)

Mobilization

Quantity and quality. (Cav Jour — Mar-Apr 1942)

Organization and Equipment

The fighting unit. (A Ord — Mar-Apr 1942)
The new combat helmet. (A Ord — May-Jun 1942)
Army reorganization. (A Ord — May-Jun 1942)
Clothing and equipage. (QM Rev — Mar-Apr 1942)
The dangerous struggle in our war command. (Amer Mer — Jun 1942)
The army and its critics. (Atlantic — May 1942)
Barrage balloons. [See page 28]
The combat team in an infantry division. [See page 5]
Our system of evacuation in the combat zone. [See page 20]
The birth of an infantry division. [See page 16]

Personnel

America's air chiefs. (Ftg Forc — Apr 1942)
Officer training. (A Ord — May-Jun 1942)
Concerning dependents. (CA Jour — Mar-Apr 1942)
The American soldier. (FA Jour — Mar 1942)
National service life insurance. (Inf Jour — Apr 1942)
American negroes and the war. (Harper's — Apr 1942)

Supply

Our flexible combat supply. (QM Rev — Mar-Apr 1942)

Training

Making America's sky warriors. (AF News Let — Mar-Apr 1942)
Ordnance in the field. (A Ord — May-Jun 1942)
Smoke saves the day. (Chem War Bul — Apr 1942) [See also page ....]
Talking to the eye. (CA Jour — Mar-Apr 1942)
"Tank Attackers" in action. (FA Jour — May 1942)
The American soldier. (FA Jour — May 1942)
Demolitions during the Louisiana maneuvers. (Mil Eng — May 1942)
Air support. (Res Off — Mar 1942)
The dangerous struggle in our war command. (Amer Mer Jun 1942)
Guerrillas on Oregon coast ready their guns for an enemy invasion. (Life — 6 Apr 1942)
Philippine epic: General MacArthur and his men make a Thermopylae of Bataan. (Life — 13 Apr 1942)
War days on Corregidor. (Life — 20 Apr 1942)
U.S. troops arrive on Australian front. (Life — 4 May 1942)
Air corps radio university. (U.S. Air Services — Apr 1942)
Barrage balloons. [See page 28]
The combat team in an infantry division. [See page 5]
Our system of evacuation in the combat zone. [See page 20]
The birth of an infantry division. [See page 16]

UNITED STATES (NAVY OF)

Organization and Equipment

The wings of sea power. (Nav Inst Proc — Apr 1942)
Future naval forces. (Nav Inst Proc — May 1942)
The Galápagos. (Nav Inst Proc — May 1942)
Air power 1913-43. (Nav Inst Proc — May 1942)
The dangerous struggle in our war command. (Amer Mer — Jun 1942)
The No. 1 bottleneck now is lack of ships. (Fortune — May 1942)

Training

Future naval forces. (Nav Inst Proc — May 1942)

UNITY OF COMMAND

Co-operation or co-ordination. (Ftg Forc — Apr 1942)
The dangerous struggle in our war command. (Amer Mer — Jun 1942)

V

VETERINARY SERVICE

Equine respiratory diseases in newly purchased animals. (Vet Bul — Apr 1942)
Fuadin in the treatment of verminous dermatitis in horses. (Vet Bul — Apr 1942)
Grass intoxication and tetany. (Vet Bul — Apr 1942)
Storage of canned cheese under widely different temperatures. (Vet Bul — Apr 1942)
Sulphanilamide treatment of streptococcal infections in horses. (Vet Bul — Apr 1942)
The horse goes back to war. (Vet Bul — Apr 1942)
A temporary remount depot. (Vet Bul — Apr 1942)
Tenderness of beef as affected by aging with and without subsequent freezing. (Vet Bul — Apr 1942)

W

WAR PEACE

Geopolitics and today's war. (Inf Jour — May 1942)
How shall we win? (Nav Inst Proc — Apr 1942)
Victory: In war and peace. (Nav Inst Proc — Apr 1942)
The ghost of Napoleon. (Atlantic — May 1942)
Man power and woman power. (Round Table — Mar 1942)
Aircraft in peace and in war. (U.S. Air Services — May 1942)

WARS

ASIA

The operations in the Southern Desert, Iraq, 1927-28. (Jour USII — Oct 1941)

EUROPE

18th CENTURY

Mare Nostrum. (Jour R Art — Apr 1942)

NAPOLEONIC WARS (1795-1815)

The ghost of Napoleon. (Atlantic — May 1942)

FRANCE-GERMANY (1870-1871)

Bismarck, Russia, and the origins of the War of 1870. (Jour Mod Hist — Jun 1942)

WORLD WAR I (1914-1918)

The East African Campaign, 1914-1916. (Jour RUSI — Feb 1942)
The navy gunboat Vicksburg captures a German sea raider. (Nav Inst Proc — Apr 1942)
Naval censorship in 1914. (Nav Inst Proc — May 1942)
Air power 1913-43. (Nav Inst Proc — May 1942)
The War of 1914 as interpreted by German intellectuals. (Jour Mod Hist — Jun 1942)

WORLD WAR II (1939-)

Interior versus exterior lines. (Ftg Forc — Apr 1942)
Co-operation or co-ordination. (Ftg Forc — Apr 1942)
The Channel battle. (Ftg Forc — Apr 1942)
For the suppression of mischiefs. (Aero — 27 Feb 1942)
The Stirling. (Aero — 27 Feb 1942)
In defense of air bases. (Aero — 16 Jan 1942)
Italian losses. (Aero — 6 Mar 1942)
Supplies from France. (Aero — 6 Mar 1942)
Guerrilla fighting by air. (Aero — 13 Mar 1942)
The future of bombing. (Aero — 13 Mar 1942)
Making America's sky warriors. (AF News Let — Mar-Apr 1942)
The Austrialian front. (AF News Let — Mar-Apr 1942)
Polish pilots still scrapping. (AF News Let — Mar-Apr 1942)
Reflections of a bomber pilot. (AF News Let — Mar-Apr 1942)
Fighting Filipinos of the air. (AF News Let — Mar-Apr 1942)
Plans for a medical history of the emergency. (A Med Bul — Jan 1942)
A treatment of army casualties in Hawaii. (A Med Bul — Apr 1942)
First hand lessons at Pearl Harbor. (A Med Bul — Apr 1942)
Viscount Gort's despatches. (A Quar — Jan 1942)
The war at sea (August-October 1941). (A Quar — Jan 1942)
The "Tankenstein" monster. (A Quar — Jan 1942)
The second German war (September-November, 1941.) (A Quar — Jan 1942)
How Copenhagen was occupied. (A Quar — Jan 1942)
Those amphibious Japanese. (CA Jour — Mar-Apr 1942)
Luzon diary. (FA Jour — Apr 1942)
Corregidor Cable No. 79. (FA Jour — Apr 1942)
Road to Dunkirk. (FA Jour — Apr, May 1942)
Tobruk diary. (FA Jour — Apr 1942)
Remember Pearl Harbor! (Inf Jour — Apr 1942)
The Japanese Army. (Inf Jour — Apr, May 1942)
The siege of Tobruk. (Inf Jour — Apr 1942)
Parachutes coming down. (International military survey) (Inf Jour — May 1942)
"Blitzkrieg." (Jour RAMC — Mar 1942)
How British in Burma escaped a Jap trap. (Life — 18 May 1942)
An Arctic route to Siberia. (New Rep — 18 May 1942)
Commandos — modern suicide troops. (NY Times Mag — 5 Apr 1942)
Man power and woman power. (Round Table — Mar 1942)
The strategy of the war. (Round Table — Mar 1942)
The R.A.F. in Libya. (Times [London] — 8 Apr 1942)
New warfare in Libyan Desert. (Times [London] — 8 Apr 1942)
The Russian labour front. (Times [London] — 8 Apr 1942)
The defence of Tobruk and the break-out. (Times [London] — 8 Apr 1942)
Hitler and Russia. (Times [London] — 15 Apr 1942)
A combined general staff. (Times [London] — 15 Apr 1942)
Russia takes stock. (Times [London] — 6 May 1942)
The British navy keeps that Nelson touch. [See page 19]
Japanese fighting spirit. [See page 42]
Comments on the present war: The war in Russia. [See "Foreign Military Digests" Section]
Epic of an encircled Russian unit. [See "Foreign Military Digests" Section]
German Labor Service in action. [See "Foreign Military Digests" Section]
Antitank gun versus tank. [See "Foreign Military Digests" Section]
When will the decision be attained? [See "Foreign Military Digests" Section]
Some notes on German tactics and training. [See "Foreign Military Digests" Section]
U.S.S.R. air force. [See "Foreign Military Digests" Section]
The "Ossoaviakhim" and air forces of the Soviet Union. [See "Foreign Military Digests" Section]
With the shock companies into the citadel of Brest. [See "Foreign Military Digests" Section]
Soviet ski troops. [See "Foreign Military Digests" Section]

WEAPONS

Torpedoes sprout wings. (AF News Let — Mar-Apr 1942)
Supertanks. (A Ord — Mar-Apr 1942)
Chemical defense. (A Ord — Mar-Apr 1942)
Bombs. (A Ord — May-Jun 1942)
The Cavalry Replacement Training Center. (Cav Jour — Mar-Apr 1942)
Some notes on bombing. (An Cos — Mar 1942)
The flame-thrower. (An Cos — Apr 1942)
Machine-guns: general considerations. (An Cos — Apr 1942)
Sea artillery. (FA Jour — May 1942)
The Japanese Army. (Inf Jour — Apr, May 1942)
Artillery weapons in a field force. (Jour R Art — Apr 1942)
Future naval forces. (Nav Inst Proc — May 1942)
The conversion of Forry Laucks. (Fortune — Apr 1942)
New warfare in Libyan Desert. (Times [London] — 8 Apr 1942)
Bomber ferries play thrilling part in carrying war to enemy. (U.S. Air Services — May 1942)
Infantry fire in high mountain terrain. [See "Foreign Military Digests" Section]
Jungle warfare. [See page 53]
The German foot infantry division. [See page 34]

Y

YAMAMOTO, Admiral Isoroku (1884-)

America's Enemy No. 2: Yamamoto. (Harper's — Apr 1942)